



July 2, 2003

Mr. Steve Trent Fluor Hanford Inc. 825 Jadwin Avenue Richland, WA 99352

Reference:

P.O. #630

Eberline Services R3-05-091-7517, SDG H2208

H2208



Dear Mr. Trent:

Enclosed is the data report for three solid samples designated under SAF No. F03-006 received at Eberline Services on May 14, 2003. The samples were analyzed according to the accompanying chain-of-custody documents.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion

Melina Mamma

Program Manager

MCM

Enclosure: Data Package

PECELVED AUG 1 1 2003 EDMC

Analytical Services
2030 Wright Avenue
P.O. Bex 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

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1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2208 was composed of three solid (soil) samples designated under SAF No. F03-006 with a Project Designations of: 200-PW-2/200-PW-4 OU – Borehole Soil Sampling.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

There was activity in the method blank (0.336 pCi/g). The activity was significantly below the RDL (400 pCi/g) for H3. No other problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 lodine-129 Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Uranium Analyses

The U-238 LCS percent recovery (81%) was below the 3σ limits (83 to 117%), but was within the laboratory protocol limits (80 to 120%). No other problems were encountered during the course of the analyses.

2.9 Total Uranium Analyses

No problems were encountered during the course of the analyses.

Case Narrative

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2.10 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.11 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.12 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.13 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion

Program Manager

SDG <u>7517</u> Contact <u>Melissa C. Mannion</u> Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG_H2208</u>

SUMMARY DATA SECTION

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Melina Mann

Prepared by

Melin Mammie

Reviewed by

SAMPLE DELIVERY GROUP H2208

SDG 7517 Contact Melissa C. Mannion

REPORT GUIDE

Client	Han:	ford	
Contract	No.	630	
Case no	SDG	H2208	

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

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SAMPLE DELIVERY GROUP H2208

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GUIDE, cont.

Client	Han	ford	
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Case no	SDG	H2208	

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

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SAMPLE DELIVERY GROUP H2208

SDG 7517 Contact Melissa C. Mannion

LAB SAMPLE SUMMARY

Client <u>Hanford</u> Contract No. 630 Case no SDG H2208

SAMPLE ID	CLIENT SAMPLE ID	LOCATION	MATRIX LEVEL	SAF NO	CHAIN OF CUSTODY	COLLECTED
R305091-01	B16WB3	216-A-37 (C4106)	SOLID	F02-006	F03-006-86	05/07/03 10:50
R305091-02	B16W89	216-A-37 (C4106)	SOLID	F02-006	F03-006-72	05/08/03 10:25
R305091-03	B16WB4	216-A-37 (C4106)	SOLID	F02-006	F03-006-87	05/08/03 10:25
R305091-04	Lab Control Sample		SOLID	F02-006		
R305091-05	Method Blank		SOLID	F02-006		
R305091-06	Duplicate (R305091-01)	216-A-37 (C4106)	SOLID	F02-006		05/07/03 10:50
R305091-07	Duplicate (R305091-02)	216-A-37 (C4106)	SOLID	F02-006		05/08/03 10:25
R305091-08	Spike (R305091-02)	216-A-37 (C4106)	SOLID	F02-006		05/08/03 10:25

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SAMPLE DELIVERY GROUP H2208

SDG <u>7517</u> Contact <u>Melissa C. Mannion</u>

QC SUMMARY

Client Hanford
Contract No. 630
Case no SDG H2208

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	X SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS S		LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7517	F03-006-72	B16W89	SOLID	96.5	184.7 g		05/14/03	6	R305091-02	7517-002
	F03-006-86	B16WB3	SOLID	98.5	757.2 g		05/14/03	7	R305091-01	7517-001
	F03-006-87	B16WB4	SOLID	96.8	877.2 g		05/14/03	6	R305091-03	7517-003
		Method Blank	SOLID						R305091-05	7517-005
		Lab Control Sample	SOLID						R305091-04	7517-004
		Duplicate (R305091-01)	SOLID	98.5	757.2 g		05/14/03	7	R305091-06	7517-006
		Duplicate (R305091-02)	SOLID	96.5	184.7 g		05/14/03	6	R305091-07	7517-007
		Spike (R305091-02)	SOLID	96.8	184.7 g		05/14/03	6	R305091-08	7517-008

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SAMPLE DELIVERY GROUP H2208

SDG	7517	
Contact	Melissa C. Mannion	_

PREP BATCH SUMMARY

Client	Hanford
Contract	No. 630
Case no	SDG_H2208

		PREPARATION ERROR		PLANCHETS ANALYZED						QUALI-
MATRIX	METHOD	BATCH	2σ %	CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG MS/ORIG	FIERS
Spectros	scopy									
SOLID	Americium 241 in Soil	7060 - 198	5.0	2			1	1	1/1	
SOLID	Neptunium in Soil	7060-198	5.0	1			1	1	1/1	•
SOLID	Plutonium, Isotopic in Solids	7060-198	5.0	2			1	1	1/1	
SOLID	Thorium, Isotopic in Soil	7060-198	5.0	1			1	1	1/1	
SOLID	Uranium, Isotopic in Soil	7060-198	5.0	2			1	1	1/1	<u></u>
Count ing										
SOLID	Total Strontium in Soil	7060~198	10.0	1			1	1	1/1	
SOLID	Technetium 99 in Soil	7060-198	10.0	1			1	1	1/1	
Spectros	сору	"	•							
SOLID	Gamma Scan	7060-198	15.0	2			1	1	1/1	
SOLID	Iodine 129 in Soil	7060-198	10.0	1			1	1	1/1	
ic Phosph	orimetry (KPA)								<u> </u>	
SOLID	Uranium, Total in Soil	7060-198	9.0	2			1	1	1/1	
d Scintil	lation Counting									
SOLID	Carbon 14 in Soil	7060-198	10.0	1			1	1	1/1	
SOLID	Tritium in Soil	7060-198	10.0	1			1	1	1/1 1/1	х
SOLID	Nickel 63 in Soil	7060-198	10.0	1			1	1	1/1	
	Spectros SOLID SOLID SOLID SOLID Counting SOLID SOLID	Spectroscopy SOLID Americium 241 in Soil SOLID Neptunium in Soil SOLID Plutonium, Isotopic in Solids SOLID Thorium, Isotopic in Soil SOLID Uranium, Isotopic in Soil Counting SOLID Total Strontium in Soil SOLID Technetium 99 in Soil Spectroscopy SOLID Gamma Scan SOLID Iodine 129 in Soil ic Phosphorimetry (KPA) SOLID Uranium, Total in Soil d Scintillation Counting SOLID Carbon 14 in Soil SOLID Tritium in Soil	Spectroscopy SOLID Neptunium in Soil 7060-198 SOLID Plutonium, Isotopic in Solids 7060-198 SOLID Thorium, Isotopic in Soil 7060-198 SOLID Uranium, Isotopic in Soil 7060-198 Counting SOLID Total Strontium in Soil 7060-198 SOLID Technetium 99 in Soil 7060-198 SPECTROSCOPY SOLID Gamma Scan 7060-198 SOLID Iodine 129 in Soil 7060-198 dic Phosphorimetry (KPA) SOLID Uranium, Total in Soil 7060-198 dis Scintillation Counting SOLID Carbon 14 in Soil 7060-198 SOLID Tritium in Soil 7060-198	MATRIX METHOD BATCH 2a % Spectroscopy SOLID Americium 241 in Soil 7060-198 5.0 SOLID Neptunium in Soil 7060-198 5.0 SOLID Plutonium, Isotopic in Soil 7060-198 5.0 SOLID Thorium, Isotopic in Soil 7060-198 5.0 SOLID Uranium, Isotopic in Soil 7060-198 5.0 Counting SOLID Total Strontium in Soil 7060-198 10.0 SOLID Technetium 99 in Soil 7060-198 10.0 SPECtroscopy SOLID Gamma Scan 7060-198 15.0 SOLID Iodine 129 in Soil 7060-198 10.0 SOLID Uranium, Total in Soil 7060-198 9.0 A Scintillation Counting SOLID 7060-198 10.0 SOLID Tritium in Soil 7060-198 10.0	MATRIX METHOD BATCH 20 % CLIENT Spectroscopy SOLID Americium 241 in Soil 7060-198 5.0 2 SOLID Neptunium in Soil 7060-198 5.0 1 SOLID Plutonium, Isotopic in Soil 7060-198 5.0 2 SOLID Thorium, Isotopic in Soil 7060-198 5.0 2 Counting SOLID Uranium, Isotopic in Soil 7060-198 5.0 2 Counting SOLID Total Strontium in Soil 7060-198 10.0 1 SOLID Technetium 99 in Soil 7060-198 10.0 1 Spectroscopy SOLID Gamma Scan 7060-198 10.0 1 SOLID Iodine 129 in Soil 7060-198 10.0 1 Ic Phosphorimetry (KPA) SOLID Total in Soil 7060-198 10.0 1 SOLID Carbon 14 in Soil 7060-198 10.0 1 SOLID Tritium in Soil 7060-198 10.0 1	Spectroscopy SOLID Americium 241 in Soil 7060-198 5.0 2	Spectroscopy SOLID Americium 241 in Soil 7060-198 5.0 2 SOLID Neptunium in Soil 7060-198 5.0 2 SOLID Plutonium, Isotopic in Solids 7060-198 5.0 2 SOLID Thorium, Isotopic in Soil 7060-198 5.0 2 SOLID Uranium, Isotopic in Soil 7060-198 5.0 2 SOLID Total Strontium in Soil 7060-198 5.0 2 SOLID Total Strontium in Soil 7060-198 10.0 1 Spectroscopy SOLID Gamma Scan 7060-198 10.0 1 Spectroscopy SOLID Iodine 129 in Soil 7060-198 10.0 1 Solid Total In Soil 7060-198 9.0 2 SOLID Uranium, Total in Soil 7060-198 9.0 2 SOLID Uranium, Total in Soil 7060-198 10.0 1 Solid Solid Carbon 14 in Soil 7060-198 10.0 1 SOLID Uranium, Total in Soil 7060-198 10.0 1 SOLID Uranium, Total in Soil 7060-198 10.0 1 SOLID Uranium in Soil 706	NATRIX METHOD BATCH 20 % CLIENT MORE RE BLANK	MATRIX METHOD BATCH 20 % CLIENT MORE RE BLANK LCS	MATRIX METHOD MATRIX METHOD MATRIX METHOD MATRIX METHOD MATRIX METHOD M

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

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SDG <u>7517</u> Contact <u>Melissa C. Mannion</u>

LAB WORK SUMMARY

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H2208</u>

LAB SAMPLE COLLECTED RECEIVED	CLIENT SAMPLE ID LOCATION CUSTODY SAF	MATRIX No	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	BY	METHOD
R305091-01	B16WB3		7517-001	AM		06/11/03	07/02/03	MCM	Americium 241 in Soil
05/07/03	216-A-37 (C4106)	SOLID	7517-001	GAM		06/03/03	07/02/03	MCM	Gamma Scan
05/14/03		-006	7517-001	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
•			7517-001	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
			7517-001	U_T		06/09/03		MCM	Uranium, Total in Soil
R305091-02	B16W89		7517-002	С		06/24/03	07/02/03	MCM	Carbon 14 in Soil
05/08/03	216-A-37 (C4106)	SOLID	7517-002	Н		06/22/03	07/02/03	MCM	Tritium in Soil
05/14/03	F03-006-72 F02	-006	7517-002	1		06/21/03	07/02/03	MCM	Iodine 129 in Soil
			7517-002	NI_L		06/13/03	07/02/03	MCM	Nickel 63 in Soil
			7517-002	NP		06/19/03	07/02/03	MCM	Neptunium in Soil
			7517-002	SR		06/10/03	07/02/03	MCM	Total Strontium in Soil
			7517-002	TC		06/29/03	07/02/03	MCM	Technetium 99 in Soil
			7517-002	TH		06/19/03	07/02/03	MCM	Thorium, Isotopic in Soil
R305091~03	B16WB4	-	7517-003	АМ		06/11/03	07/02/03	MCM	Americium 241 in Soil
05/08/03	216-A-37 (C4106)	SOLID	7517-003	GAM		06/04/03	07/02/03	MCM	Gamma Scan
05/14/03	F03-006-87 F02-	-006	7517-003	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
			7517-003	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
·			7517-003	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil
R305091-04	Lab Control Sample		7517-004	AM		06/11/03	07/02/03	MCM	Americium 241 in Soil
		SOLID	7517-004	C		06/25/03	07/02/03	MCM	Carbon 14 în Soil
	F02-	-006	7517-004	GAM		06/04/03	07/02/03	MCM	Gamma Scan
			7517-004	Н		06/22/03	07/02/03	MCM	Tritium in Soil
			7517-004	1		06/22/03	07/02/03	MCM	Iodine 129 in Soil
			7517-004	NI_L		06/13/03	07/02/03	MCM	Nickel 63 in Soil
			7517-004	NP		06/19/03	07/02/03	MCM	Neptunium in Soil
			7517-004	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
			7517-004	SR		06/10/03	07/02/03	MCM	Total Strontium in Soil
			7517-004	TC		06/27/03	07/02/03	MCM	Technetium 99 in Soil
			7517-004	TH		06/19/03	07/02/03	MCM	Thorium, Isotopic in Soil
			7517-004	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
			7517-004	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil

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WORK SUMMARY, cont.

Client <u>Hanford</u> Contract <u>No. 630</u> Case no <u>SDG H2208</u>

LAB SAMPLE	CLIENT SAMPLE ID								
COLLECTED RECEIVED	LOCATION CUSTODY SAF No	MATRIX	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	вү	МЕТНОО
R305091-05	Method Blank		7517-005	AM		06/11/03	07/02/03	мсм	Americium 241 in Soil
		SOLID	7517-005	С		06/24/03	07/02/03	MCM	Carbon 14 in Soil
	F02-006		7517-005	GAM		06/04/03	07/02/03	MCM	Gamma Scan
			7517-005	H		06/22/03	07/02/03	MCM	Tritium in Soil
			7517-005	1		06/22/03	07/02/03	MCM	lodine 129 in Soil
			7517-005	NI_L		06/13/03	07/02/03	MCM	Nickel 63 in Soil
			7517-005	NP		06/19/03	07/02/03	MCM	Neptunium in Soil
			7517-005	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
			7517~005	SR		06/10/03	07/02/03	MCM	Total Strontium in Soil
			7517-005	TC		06/28/03	07/02/03	MCM	Technetium 99 in Soil
			7517-005	TH		06/19/03	07/02/03	MCM	Thorium, Isotopic in Soil
			7517-005	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
			7517-005	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil
R305091-06	Duplicate (R305091-01)		7517-006	АМ		06/11/03	07/02/03	MCM	Americium 241 in Soil
05/07/03	216-A-37 (C4106)	SOLID	7517-006	GAM		06/04/03	07/02/03	MCM	Gamma Scan
05/14/03	F02-006		7517-006	PU		06/10/03	07/02/03	MCM	Plutonium, Isotopic in Solids
			7517-006	U		06/18/03	07/02/03	MCM	Uranium, Isotopic in Soil
			7 517-006	U_T		06/09/03	07/02/03	MCM	Uranium, Total in Soil
R305091-07	Duplicate (R305091-02)		7517-007	С		06/24/03	07/02/03	MCM	Carbon 14 in Soil
05/08/03	216-A-37 (C4106)	SOLID	7517-007	н		06/22/03	07/02/03	MCM	Tritium in Soil
05/14/03	F02-006		7517-007	I		06/23/03	07/02/03	мсм	Iodine 129 in Soil
			7517-007	NI_L		06/13/03	07/02/03	MCM	Nickel 63 in Soil
			7517-007	NP		06/19/03	07/02/03	MCM	Neptunium in Soil
			7517-007	SR		06/10/03	07/02/03	MCM	Total Strontium in Soil
			7517-007	TC		06/27/03	07/02/03	MCM	Technetium 99 in Soil
			7517-007	TH		06/19/03	07/02/03	MCM	Thorium, Isotopic in Soil
R305091-08	Spike (R305091-02)		7517-008	Н		06/22/03	07/02/03	МСМ	Tritium in Soil
05/08/03 05/14/03	216-A-37 (C4106) F02-006	SOLID							

WORK SUMMARY
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WORK SUMMARY, cont.

Client	Hanford
Contract	No. 630
Case no	SDG H2208

TEST	SAF No	COUNTS OF	TESTS BY SAM	CLIENT MORE	RE BLANK	LCS	DUP SPIKE	TOTAL
АМ	F02-006	Americium 241 in Soil	AMCMISO_IE_PLATE_AEA	2	1	1	1	5
С	F02-006	Carbon 14 in Soil	C14_COX_LSC	1	1	1	1	4
GAM	F02-006	Gamma Scan	GAMMA_GS	2	1	1	1	5
Н	F02-006	Tritium in Soil	906.0_H3_LSC	1	1	1	1 1	5
I	F02-006	Iodine 129 in Soil	I 129_SEP_LEPS_GS	1	1	1	1	1 4
NI_L	F02-006	Nickel 63 in Soil	NI63_LSC	1	1	1	1	1 4
NP	F02-006	Neptunium in Soil	NP237_LLE_PLATE_AEA	1	1	1	1	1 4
PU	F02-006	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	2	1	1	1	5
SR	F02-006	Total Strontium in Soil	SRTOT_SEP_PRECIP GPC	1	1	1	1	4
TC	F02-006	Technetium 99 in Soil	TC99_TR_SEP_LSC	1	1	1	1	7
TH	F02-006	Thorium, Isotopic in Soil	THISO_IE_PLATE AEA	1	1	1	1	1
U	F02-006	Uranium, Isotopic in Soil	UISO_PLATE_AEA	2	1	1	1	5
ז_ט_ד	F02-006	Uranium, Total in Soil	UTOT_KPA	2	1	1	1	5
TOTALS				18	13	13	13 1	58

WORK SUMMARY
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7517-005

METHOD BLANK

Method Blank

	7517 Melissa C. Mannion	Client/Case no Contract	 SDG_H2208
Lab sample id Dept sample id		Client sample id Material/Matrix SAF No	 SOLID

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.336	0.17	0.27	400		н
Carbon 14	14762-75-5	-1.45	1.9	3.2	50	U	C
Nickel 63	13981-37-8	0.382	1.2	2.0	30	U	NI_L
Total Strontium	SR-RAD	0.006	0.14	0.29	1.0	U	SR
Technetium 99	14133-76-7	0.149	0.28	0.58	15	U	TC
Thorium 228	14274-82-9	0.059	0.12	0.28		บ	TH
Thorium 230	14269-63-7	0.147	0.18	0.23	1.0	U	TH
Thorium 232	TH-232	0	0.059	0.23	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0	0.001	0.003	1.0	U	UТ
Uranium 233/234	U-233/234	-0.028	0.056	0.21	1.0	Ŭ	<u>י</u>
Uranium 235	15117-96-1	0.034	0.068	0.26	1.0	U	U
Uranium 238	U-238	0	0.056	0.21	1.0	U	U
Neptunium 237	13994-20-2	0	0.078	0.12	1.0	บ	NP
Plutonium 238	13981-16-3	-0.026	0.051	0.20	1.0	ប	PU
Plutonium 239/240	PU-239/240	0	0.051	0.20	1.0	U	PU
Americium 241	14596-10-2	0	0.066	0.25	1.0	ប	AM
Iodine 129	15046-84-1	0.352	0.56	1.3	2.0	U	I
Potassium 40	13966-00-2	U		0.63		U	GAM
Cobalt 60	10198-40-0	U		0.028	0.050	ប	GAM
Antimony 125	14234-35-6	ប		0.055		U	GAM
Tin 126	15832-50-5	U		0.042		U	GAM
Cesium 134	13967-70-9	U		0.027		ប	GAM
Cesium 137	10045-97-3	U		0.024	0.10	U	GAM
Radium 226	13982-63-3	υ		0.045		U	GAM
Radium 228	15262-20-1	U		0.10		U	GAM
Europium 152	14683-23-9	U		0.060	0.10	U	GAM
Europium 154	15585-10-1	U		0.075	0.10	ប	GAM
Europium 155	14391-16-3	ប		0.059	0.10	บ	GAM
Thorium 228	14274-82-9	Ū		0.067		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

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7517-005

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Method Blank

1	7517 Melissa C. Mannion	Client/Case no Contract	 SDG_H2208
Lab sample id Dept sample id		Client sample id Material/Matrix SAF No	SOLID

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 232	TH-232	U		0.10		บ	GAM
Uranium 235	15117-96-1	U		0.095		U	GAM
Uranium 238	U-238	บ		2.7		ប	GAM
Americium 241	14596-10-2	υ		0.11		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

QC-BLANK #44789

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7517-004

LAB CONTROL SAMPLE

Lab Control Sample

SDG <u>7517</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> <u>SDG H2208</u> Contract <u>No. 630</u>
Lab sample id <u>R305091-04</u> Dept sample id <u>7517-004</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	13.0	0.42	0.28	400	В	н	13.0	0.52	100	83-117	80-120
Carbon 14	1820	37	9.7	50		Ç	1970	79	92	85-115	80-120
Nickel 63	214	4.6	2.3	30		NI_L	228	9.1	94	84-116	80-120
Total Strontium	23.0	0.56	0.19	1.0		SR	21.0	0.84	110	82-118	80-120
Technetium 99	114	2.7	0.52	15		TC	109	4.4	105	83-117	80-120
Thorium 230	39.5	3.7	0.30	1.0		TH	40.8	1.6	97	84-116	
Total Uranium (ug/g)	17.1	1.9	0.032	1.0		U_T	16.5	0.66	104	77-123	80-120
Uranium 233/234	18.2	2.0	0.98	1.0		u	18.6	0.74	98	81-119	80-120
Uranium 235	13.9	1.7	0.27	1.0		U	15.1	0.60	92	81-119	80-120
Uranium 238	21.0	2.2	0.93	1.0		u l	20.2	0.81	104	81-119	80-120
Neptunium 237	16.1	1.9	0.11	1.0		NP	19.9	0.80	<u>81</u>	83-117	80-120
Plutonium 238	25.1	2.4	0.20	1.0		PU	24.4	0.98	103	82-118	80-120
Plutonium 239/240	24.6	2.4	0.20	1.0		PU	26.4	1.1	93	83-117	80-120
Americium 241	20.6	2.4	0.27	1.0		AM	19.0	0.76	108	79-121	80-120
Iodine 129	121	1.2	1.4	2.0		1	116	4.6	104	83-117	80-120
Cobalt 60	0.992	0.070	0.044	0.050		GAM	1.03	0.041	96	75-125	80-120
Cesium 137	0.994	0.060	0.046	0.10		GAM	1.00	0.040	99	75-125	80-120

200-PW-2/200-PW-4 OU - Borehole Soil

QC-LCS #44788		

LAB CONTROL SAMPLES
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7517-006

DUPLICATE

B16WB3

SDG	7517		Client/Case no <u>Hanford</u> SDG H2208
Contact	Melissa C. Mannion		Contract No. 630
	DUPLICATE	ORIGINAL	
Lab sample id	R305091-06	Lab sample id <u>R305091-01</u>	Client sample id <u>B16WB3</u>
Dept sample id	<u>7517-006</u>	Dept sample id <u>7517-001</u>	Location/Matrix 216-A-37 (C4106) SOLID
		Received <u>05/14/03</u>	Collected/Weight 05/07/03 10:50 757.2 g
% solids	98.5	% solids <u>98.5</u>	Custody/SAF No F03-006-86 F02-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ τοτ	PROT
Total Uranium (ug/g)	0.254	0.029	0.003	1.0		U_T	0.273	0.031	0.003		7	31	
Uranium 233/234	0.324	0.20	0.25	1.0		U	0.366	0.25	0.23		12	140	
Uranium 235	0.157	0.16	0.30	1.0	U	U	0	0.074	0.28	U	_		
Uranium 238	0.486	0.26	0.25	1.0		U	0.396	0.25	0.23		20	123	
Plutonium 238	0.407	0.27	0.26	1.0		PU	-0.030	0.12	0.29	U	200	203	
Plutonium 239/240	0	0.068	0.26	1.0	U	PU	0	0.060	0.23	·U	-		
Americium 241	0.057	0.11	0.22	1.0	U	AM	0.055	0.11	0.21	U	-		
Potassium 40	8.71	0.45	0.22			GAM	8.04	0.58	0.34		8	34	
Cobalt 60	U		0.021	0.050	U	GAM	Ü		0.030	U	-		
Antimony 125	U		0.045		U	GAM	U		0.061	U	_		
Tin 126	U		0.033		IJ	GAM	U		0.047	U			
Cesium 134	U		0.028		U	GAM	U		0.037	U	-		
Cesium 137	U		0.019	0.10	U	GAM	U		0.027	U	-		
Radium 226	0.263	0.039	0.039			GAM	0.263	0.051	0.057		0	49	
Radium 228	0.371	0.090	0.091			GAM	0.381	0.13	0.14		3	71	
Europium 152	U		0.050	0.10	U	GAM	U		0.071	U	-		
Europium 154	U		0.077	0.10	U	GAM	U		0.11	Ü	_		
Europium 155	U		0.046	0.10	U	GAM	U		0.066	Ü	_		
Thorium 228	0.376	0.028	0.026			GAM	0.353	0.034	0.032		6	37	
Thorium 232	0.371	0.090	0.091			GAM	0.381	0.13	0.14		3	71	
Uranium 235	U		0.068		U	GAM	U		0.097	U	-		
Uranium 238	U		2.4		U	GAM	U		3.3	U	_		
Americium 241	U		0.050		U	GAM	ŭ		0.070	u	_		

200-PW-2/200-PW-4 OU - Borehole Soil

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7517-007

DUPLICATE

B16W89

SDG <u>7517</u>		Client/Case no	Hanford SDG H2208
Contact Melissa C. Mannion		Contract	No. 630
DUPLICATE	ORIGINAL		
Lab sample id <u>R305091-07</u>	Lab sample id <u>R305091-02</u>	Client sample id	B16W89
Dept sample id <u>7517-007</u>	Dept sample id <u>7517-002</u>	Location/Matrix	216-A-37 (C4106) SOLID
	Received <u>05/14/03</u>	Collected/Weight	05/08/03 10:25 184.7 g
% solids <u>96.5</u>	% solids <u>96.5</u>	Custody/SAF No	F03-006-72 F02-006

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT
Tritium	51.6	0.73	0.24	400	8	н	50.4	0.72	0.24	В	- 2	21
Carbon 14	-3.52	1.7	3.0	50	U	С	-0.904	1.9	3.2	U	-	
Nickel 63	0.328	1.4	2.4	30	U	NI_L	0.309	1.5	2.6	U	-	
Total Strontium	0.050	0.13	0.25	1.0	U	SR	-0.034	0.12	0.17	U	-	
Technetium 99	0.087	0.15	0.53	15	Ü	TC	0.135	0.30	0.56	U	-	
Thorium 228	0.704	0.42	0.46			TH	0.554	0.31	0.38		24	125
Thorium 230	0.414	0.33	0.40	1.0		TH	0.553	0.31	0.29		29	141
Thorium 232	0.414	0.25	0.32	1.0		TH	0.400	0.25	0.24		3	131
Neptunium 237	0	0.80	0.12	1.0	U	NP	0	0.069	0.10	U	-	
Iodine 129	-0.648	0.64	1.5	2.0	U	1	0.220	1.1	2.5	U	-	

200-PW-2/200-PW-4 OU - Borehole Soil

QC-DUP#2 44791

DUPLICATES
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7517-008

MATRIX SPIKE

B16W89

SDG <u>7517</u> Contact Melissa C. Mannion		Client/Case no <u>Hanford</u> SDG H2208 Contract No. 630
MATRIX SPIKE	ORIGINAL	
Lab sample id <u>R305091-08</u>	Lab sample id <u>R305091-02</u>	Client sample id <u>B16W89</u>
Dept sample id <u>7517-008</u>	Dept sample id <u>7517-002</u>	Location/Matrix 216-A-37 (C4106) SOLID
	Received <u>05/14/03</u>	Collected/Weight <u>05/08/03 10:25 184.7 g</u>
% solids <u>96.8</u>	% solids <u>96.5</u>	Custody/SAF No <u>F03-006-72</u> <u>F02-006</u>

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS		ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC 3σ LMTS % (TOTAL)	
Tritium	92.1	0.94	0.23	400	вх	Н	47.3	1.9	50.4	0.72	88 66-134	60-140

200-PW-2/200-PW-4 OU - Borehole Soil

MATRIX SPIKES
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7517-001

DATA SHEET

B16WB3

Į.	7517 Melissa C. Mannion	Client/Case no Contract		SDG_H2208
Lab sample id Dept sample id Received % solids	7517-001 05/14/03		216-A-37 (C4106) 05/07/03 10:50 757	·· ·

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.273	0.031	0.003	1.0		U_T
Uranium 233/234	U-233/234	0.366	0.25	0.23	1.0		ϋ
Uranium 235	15117-96-1	0	0.074	0.28	1.0	U	U
Uranium 238	U-238	0.396	0.25	0.23	1.0		Ü
Plutonium 238	13981-16-3	-0.030	0.12	0.29	1.0	บ	PU
Plutonium 239/240	PU-239/240	0	0.060	0.23	1.0	บ	PU
Americium 241	14596-10-2	0.055	0.11	0.21	1.0	ប	AM
Potassium 40	13966-00-2	8.04	0.58	0.34			GAM
Cobalt 60	10198-40-0	υ		0.030	0.050	U	GAM
Antimony 125	14234-35-6	U		0.061		บ	GAM
Tin 126	15832-50-5	ប		0.047		U	GAM
Cesium 134	13967-70-9	υ		0.037		U	GAM
Cesium 137	10045-97-3	υ		0.027	0.10	U	GAM
Radium 226	13982-63-3	0.263	0.051	0.057			GAM
Radium 228	15262-20-1	0.381	0.13	0.14			GAM
Europium 152	14683 - 23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.11	0.10	Ū	GAM
Europium 155	14391-16-3	U		0.066	0.10	Ū	GAM
Thorium 228	14274-82-9	0.353	0.034	0.032		_	GAM
Thorium 232	TH-232	0.381	0.13	0.14			GAM
Uranium 235	15117-96-1	U		0.097		U	GAM
Uranium 238	U-238	U		3.3		U	GAM
Americium 241	14596-10-2	U		0.070		U	GAM

200-PW-2/200-PW-4 OU - Borehole Soil

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7517-002

DATA SHEET

B16W89

I .	7517 Melissa C. Mannion	Client/Case no Contract		SDG_H2208
	·	Client sample id Location/Matrix Collected/Weight Custody/SAF No	216-A-37 (C4106) 05/08/03 10:25 184	SOLID .7 q -006

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	50.4	0.72	0.24	400	В	Н
Carbon 14	14762- 75- 5	-0.904	1.9	3.2	50	ប	C
Nickel 63	13981-37-8	0.309	1.5	2.6	30	ซ	NI L
Total Strontium	SR-RAD	-0.034	0.12	0.17	1.0	Ü	sr_
Technetium 99	14133-76-7	0.135	0.30	0.56	15	ប	TC
Thorium 228	14274-82-9	0.554	0.31	0.38			TH
Thorium 230	14269-63-7	0.553	0.31	0.29	1.0		TH
Thorium 232	TH-232	0.400	0.25	0.24	1.0		TH
Neptunium 237	13994-20-2	0	0.069	0.10	1.0	U	NP
Iodine 129	15046-84-1	0.220	1.1	2.5	2.0	Ū	I

200-PW-2/200-PW-4 OU - Borehole Soil

DATA SHEETS
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7517-003

DATA SHEET

B16WB4

1	7517 Melissa C. Mannion	Client/Case no Contract		
Lab sample id Dept sample id Received % solids	7517-003 05/14/03		216-A-37 (C4106) SOLID 05/08/03 10:25 877.2 g	-

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Uranium (ug/g)	7440-61-1	0.313	0.034	0.003	1.0		U_T
Uranium 233/234	U-233/234	0.374	0.23	0.22	1.0		บ
Uranium 235	15117-96-1	0.035	0.070	0.27	1.0	U	Ü
Uranium 238	U-238	0.345	0.17	0.22	1.0		U
Plutonium 238	13981-16-3	0.037	0.15	0.29	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.075	0.29	1.0	U	PU
Americium 241	14596-10-2	-0.028	0.056	0.21	1.0	บ	AM
Potassium 40	13966-00-2	9.15	0.65	0.37			GAM
Cobalt 60	10198-40-0	U		0.033	0.050	ប	GAM
Antimony 125	14234-35-6	U		0.070		U	GAM
Tin 126	15832-50-5	ប		0.048		U	GAM
Cesium 134	13967 - 70-9	U		0.043		ប	GAM
Cesium 137	10045-97-3	ซ		0.029	0.10	U	GAM
Radium 226	13982-63-3	0.301	0.061	0.064			GAM
Radium 228	15262-20-1	0.488	0.14	0.13			GAM
Europium 152	14683-23-9	ប		0.080	0.10	ប	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16 - 3	U		0.13	0.10	ប	GAM
Thorium 228	14274-82-9	0.402	0.039	0.036			GAM
Thorium 232	TH-232	0.488	0.14	0.13			GAM
Uranium 235	15117-96-1	U		0.11		U	GAM
Uranium 238	U-238	U		3.6		υ	GAM
Americium 241	ប		0.082		U	GAM	

200-PW-2/200-PW-4 OU - Borehole Soil

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SAMPLE DELIVERY GROUP #2208

Test AM Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

AMERICIUM 241 IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB SAMPLE ID	RAW SUF- TEST FIX PLANCHET	CLIENT SAMPLE ID	Americium 241	
Preparation	n batch 7060-198			· · · · · · · · · · · · · · · · · · ·
R305091-01	7517-001	B16WB3	U	
R305091-03	7517-003	B16WB4	IJ	
R305091-04	7517-004	LCS (QC 1D=44788)	ok	
R305091-05	7517-005	BLK (QC ID=44789)	U	
R305091-06	7517-006	Duplicate (R305091-01)	- U	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST		CLIENT	SAMPI	E ID		MDA pCi/s	ALIQ 9	PREF FAC	DILU-	YIELD %	EFF %			 	PREPARED	ANAL- YZED	DETECTOR
Preparation	batch	7060	-198	2σ	prep er	ror 5	5.0 %	Reference	Lab	Notebool	7060	pg.	198			•		
R305091-01		1	B16WB3				0.2	0.500			88		116		35	06/11/03	06/11	SS-005
R305091-03		1	B16WB4				0.21	0.500			78		116		34	06/11/03	06/11	SS-008
R305091-04		1	LCS (QI	C ID=4	4788)		0.27	0.500			62		116			06/11/03	06/11	SS-010
R305091-05		(BLK (Q	C ID=4	4789)		0.25	0.500			72		117			06/11/03	06/11	SS-011
R305091-06		ľ	•	-	305091- 4790)	01)	0.22	0.500			81		117		35	06/11/03	06/11	SS-015
Nominal valu	res an	d lim	its fro	om met	hod		1.0	0.500			20-10	5	100	100	 180			

	PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
Ì		CP-060	Soil Preparation, rev 4
		CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
		CP-963	Americium and Curium in Water and Dissolved
			Samples by Extraction Chromatography, rev 3
		CP-008	Heavy Element Electroplating, rev 7

AVERAGES ± 2 SD MDA 0.23 ± 0.054
FOR 5 SAMPLES YIELD 76 ± 20

METHOD SUMMARIES
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SAMPLE DELIVERY GROUP H2208

Test NP Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

NEPTUNIUM IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB RAW SAMPLE ID TEST	SUF- FIX PLANCHET	CLIENT SAMPLE ID	Neptunium 237	
Preparation batcl	7060-198			
R305091-02	7517-002	B16W89	U	
R305091-04	7517-004	LCS (QC ID=44788)	LOW	
R305091-05	7517-005	BLK (QC ID=44789)	U	
R305091-07	7517-007	Duplicate (R305091-02)	- U	

METHOD PERFORMANCE

SAMPLE ID	RAW TEST	SUF- FIX CLIE	NT S	AMPLE ID	MDA pCi/		PREF	P DILU- C TION	YIELD	EFF %		DRIFT KeV		PREPARED	ANAL- YZED	DETECTOR
Preparation	batch	7060-198)	2σ prep error	5.0 %	Reference	Lab	Notebool	k 7060	pg.	198	 -				
R305091-02		B16	189		0.1	0 0.500			69		116		42	06/17/03	06/19	SS-058
R305091-04		LCS	(QC	ID=44788)	0.1	1 0.500			65		104			06/17/03	06/19	SS-055
R305091-05		BLK	(QC	ID=44789)	0.1	2 0.500			63		104			06/17/03	06/19	SS-056
R305091-07		•		e (R305091-02) ID=44791)	0.1	2 0.500			64		104		42	06/17/03	06/19	SS-057
Nominal valu	ues an	d limits	from	method	1.0	0.500			20-10	5	100	 	180			

	PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
		CP-060	Soil Preparation, rev 4
ļ		CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
ł		CP-930	Neptunium from Solids and Water by Extraction
l			Chromatography, rev 0
		CP-008	Heavy Element Electroplating, rev 7
Į			

AVERAGES ± 2 SD	MDA _	0.11	±	0.019
FOR 4 SAMPLES	YIELD	65	±	5

METHOD SUMMARIES
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SAMPLE DELIVERY GROUP H2208

Test PU Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS
ALPHA SPECTROSCOPY

Client <u>Hanford</u>
Contract <u>No. 630</u>
Contract <u>SDG H2208</u>

RESULTS

SAMPLE ID TE	AW SUF- EST FIX PLANCHET	CLIENT SAMPLE ID	Plutonium 238	Plutonium 239/240	
Preparation ba	atch 7060-198				
R305091-01	7517-001	816W83	U	U	
R305091-03	7517-003	B16WB4	Ü	U	
R305091-04	7517-004	LCS (QC 1D=44788)	ok	ok	
R305091-05	7517-005	BLK (QC 1D=44789)	U	υ	
R305091-06	7517-006	Duplicate (R305091-01)	ok	- U	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST		LIENT	SAMPLE II)	MAX MI pCi/s			DILU-	YIELD %					PREPARED	ANAL- YZED	DETECTOR
Preparation	batch	7060-	198	2σ prej	error	5.0 %	Reference	Lab	Notebook	7060	pg.	198					
R305091-01		В	16W83			0.29	0.500			80	•	111		34	06/10/03	06/10	SS-040
R305091-03		В	16WB4			0.29	0.500			63		112		33	06/10/03	06/10	SS-042
R305091-04		L	CS (Q	ID=44788	3)	0.20	0.500			85		118			06/10/03	06/10	SS-043
R305091-05		В	LK (QC	ID=44789	?).	0.20	0.500			82		118			06/10/03	06/10	SS-044
R305091-06		D	•	ate (R3050 : ID=44790		0.26	0.500			66		118		34	06/10/03	06/10	SS-045
Nominal valu	ues ar	nd limi	ts fro	om method		1.0	0.500			20-105	5	100	100	 180			

	PROCEDURES		PUISO_PLATE_AEA
		CP-060	Soil Preparation, rev 4
İ		CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
		CP-941	Plutonium in Water and Dissolved Samples by
			Extraction Chromatography, rev 1
1		CP-008	Heavy Element Electroplating, rev 7
ı			

AVERAGES ± 2 SD	MDA	0.25	±.	0.091
FOR 5 SAMPLES	YIELD _	75	ŧ.	20

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SAMPLE DELIVERY GROUP H2208

Test TH Matrix SOLID SDG 7517 Contact Melissa C. Mannion

LAB METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL ALPHA SPECTROSCOPY

Client Hanford Contract No. 630 Contract SDG H2208

RESULTS

LAB RAW SUF-

SAMPLE ID TEST	FIX PLANCHET	CLIENT SAMPLE ID	Thorium 230	
Preparation batcl	n 7060-198			
R305091-02	7517-002	B16W89	0.553	
R305091-04	7517-004	LCS (QC ID=44788)	ok	
R305091-05	7517-005	BLK (QC ID=44789)	U	
R305091-07	7517-007	Duplicate (R305091-02)	ok	

METHOD PERFORMANCE

LAB SAMPLE ID	RAW :	SUF- FIX CLIENT	SAMPLE ID	MAX ME pCi/g		PREP FAC	DILU-	YIELD %	EFF %		 		PREPARED	ANAL - YZED	DETECTOR
Preparation	batch	7060-198	2σ prep error	5.0 %	Reference	Lab	Notebook	7060	pg.	198					
R305091-02		816W89		0.29	0.250			87		206		42	06/19/03	06/19	SS-039
R305091-04		LCS (QC	ID=44788)	0.30	0.250			83		206			06/19/03	06/19	SS-040
R305091-05		BLK (QC	ID=44789)	0.23	0.250			89		206			06/19/03	06/19	SS-042
R305091-07			te (R305091-02) ID=44791)	0.40	0.250			88		150		42	06/19/03	06/19	ss-039
Nominal valu	Jės and	d limits fro	m method	1.0	0.250			20-105	5	150		180			

	CP-008	Heavy Element Electroplating, rev 7
		Extraction Chromatography, rev 1
	CP-900	Thorium in Water and Dissolved Solid Samples by
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-060	Soil Preparation, rev 4
PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA

AVERAGES ± 2 SD	MDA _	0.30	±	0.14
FOR 4 SAMPLES	YIELD .	87	±	5

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SAMPLE DELIVERY GROUP H2208

Test U Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB	RAW SUF-			1: Uranium	2: Uranium	3: Uranium			ATIOS	(%)
SAMPLE ID	TEST FIX	PLANCHET	CLIENT SAMPLE ID	233/234	235	238	1÷3	2σ	2÷3	2σ
Preparation	batch 706	0-198			, .					
R305091-01		7517-001	B16₩B3	0.366	U	0.396	92	86	0	19
R305091-03		7517-003	B16WB4	0.374	U	0.345	108	85	10	21
R305091-04		7517-004	LCS (QC ID=44788)	ok	ok	ok				
R305091-05		7517-005	BLK (QC ID=44789)	U	U	U				
R305091-06		7517-006	Duplicate (R305091-01)	ok	- U	ok	67	54	32	37
Nominal val	ues and li	mits from m	method RDLs (pCi/g)	1.0	1.0	1.0	100		4	
200-PW-2/20	0-PW-4 OU	- Borehole	Soil				Averages 89		14	

METHOD PERFORMANCE

	AW SUF- EST FIX CLIENT SAMPLE ID	MAX MD pCi/g		PREP FAC	DILU-	YIELD %	EFF %		FWHM keV	 	PREPARED	ANAL- YZED	DETECTOR
Preparation ba	atch 7060-198 2σ prep error	5.0 %	Reference	Lab	Notebook	7060	pg.	198					
R305091-01	B16WB3	0.28	0.500			86		104		42	06/17/03	06/18	ss-058
R305091-03	B16WB4	0.27	0.500			89		101		41	06/17/03	06/18	SS-059
R305091-04	LCS (QC ID=44788)	0.98	0.500			94		102			06/17/03	06/18	SS-060
R305091-05	BLK (QC ID=44789)	0.26	0.500			92		102			06/17/03	06/18	SS-061
R305091-06	Duplicate (R305091-01) (QC ID=44790)	0.30	0.500			80		102		42	06/17/03	06/18	SS-062
Nominal values	and limits from method	1.0	0.500			20-105	5	100	100	 180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
Į	CP-921	Uranium in Water and Dissolved Samples by
İ		Extraction Chromatography, rev 0
	CP-008	Heavy Element Electroplating, rev 7
L		

AVERAGES ± 2 SD	MDA	0.42	±	0.63
FOR 5 SAMPLES	YIELD	88	±	11

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SAMPLE DELIVERY GROUP H2208

Test <u>SR</u> Matrix <u>SOLID</u>
SDG <u>7517</u>
Contact <u>Melissa C. Mannion</u>

LAB METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client <u>Hanford</u>
Contract <u>No. 630</u>
Contract <u>SDG H2208</u>

RESULTS

SAMPLE ID	TEST FIX PLANCHET	CLIENT SAMPLE ID	Strontium
Preparation	batch 7060-198		
R305091-02	7517-002	B16W89	U
R305091-04	7517-004	LCS (QC ID=44788)	ok
R305091-05	7517-005	BLK (QC ID=44789)	U
R305091-07	7517-007	Duplicate (R305091-02)	- u

METHOD PERFORMANCE

LAB SAMPLE ID	RAW :		NT SAMPLE ID	MDA pCi/s	ALIQ 9 9	PREF		YIELD %	EFF %		DRIFT KeV		PREPARED	ANAL- YZED	DETECTOR
Preparation	batch	7060-198	2σ prep error	10.0 %	Reference	Lab	Notebook	7060	pg.	198					
R305091-02		B16W	39	0.17	7 1.00			90	·	400		33	06/10/03	06/10	GRB-230
R305091-04		LCS	(QC ID=44788)	0.19	1.00			83		400			06/10/03	06/10	GRB-232
R305091-05		BLK ((QC ID=44789)	0.29	1.00			81		100			06/10/03	06/10	GRB-230
R305091-07		•	cate (R305091-02) QC ID=44791)	0.25	1.00			95		100		33	06/10/03	06/10	GRB-232
Nominal valu	ies and	d limits 1	rom method	1.0	1.00	_		30-105	 i	100		180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
1	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-381	Strontium in Solids, rev 1
L		

AVERAGES ± 2 SD MDA 0.22 ± 0.11 FOR 4 SAMPLES YIELD 87 ± 13

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SAMPLE DELIVERY GROUP H2208

Test TC Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY

TECHNETIUM 99 IN SOIL BETA COUNTING Client <u>Hanford</u>
Contract <u>No. 630</u>
Contract <u>SDG H2208</u>

RESULTS

	W SUF- ST FIX PLANCHET	CLIENT SAMPLE ID	Technetiu 99	un.	
Preparation bat	tch 7060-198	-			
R305091-02	7517-002	B16W89	U		
R305091-04	7517-004	LCS (QC ID=44788)	ok		
R305091-05	7517-005	8LK (QC ID=44789)	U		
R305091-07	7517-007	Duplicate (R305091-02)	- U	1	

METHOD PERFORMANCE

	ST FIX CLIENT	SAMPLE ID	MDA pCi/g	ALIQ 9	PREP FAC		YIELD %					PREPARED	ANAL- YZED	DETECTOR
Preparation bat	ch 7060-198	2σ prep error	10.0 %	Reference	Lab N	Notebool	k 7060	pg.	198					
R305091-02	B16W89		0.56	1.02			88		50		52	06/24/03	06/29	GRB-222
R305091-04	LCS (QC	ID=44788)	0.52	1.00			98		50			06/24/03	06/27	GRB-218
R305091-05	BLK (QC	ID=44789)	0.58	1.00			87		50			06/24/03	06/28	GRB-202
R305091-07		te (R305091-02) ID=44791)	0.53	1.02			91		50		50	06/24/03	06/27	GRB-220
Nominal values	and limits fro	m method	15	1.00			20-105	 -	50		180	<u> </u>		

1		····
PROCEDURES	REFERENCE	TC99_TR_SEP_LSC
İ	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-021	Preparation of Tc-99m Tracer, rev 2
	CP-002	Q.C. Preparation, rev 4
	CP-003	Addition of Carriers and Tracers, rev 5
	CP-542	Technetium-99 Purification (Soil) by Extraction
1		Chromatography, rev 2
-	CP-008	Heavy Element Electroplating, rev 7
L		•

AVERAGES ± 2 SD	MDA	0.55	±	0.055
FOR 4 SAMPLES	YIELD _	91	±	10

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SAMPLE DELIVERY GROUP H2208

Test GAM Matrix SOLID
SDG 7517
Contact Melissa C. Mannion

LAB METHOD SUMMARY GAMMA SCAN GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

Preparation batc	h 7060-198				
R305091-01	7517-001	B16WB3	U	U	
R305091-03	7517-003	B16WB4	U	U	
R305091-04	7517-004	LCS (QC ID=44788)	ok	ok	
R305091-05	7517-005	BLK (QC ID=44789)	U	U	
R305091-06	7517-006	Duplicate (R305091-01)	- U	- լ	Ų

METHOD PERFORMANCE

SAMPLE ID	RAW TEST		CLIENT	SAMPLE II	D	MDA pCi/g	. AL.		EP (YIELD %		COUNT min		 	PREPARED	ANAL- YZED	DETECTOR
Preparation	batch	7060	- 198	2σ prej	p error	15.0 %	Refere	nce La	b Not	tebook	7060	pg.	198	<u> </u>				
R305091-01		(B16WB3			0.23	260						694		27	05/30/03	06/03	JR,03,00
R305091-03		6	816WB4			0.29	231						657					JR,03,00
R305091-04		ı	LCS (QC	ID=44788	3)	0.04	4 231						411					JR,07,00
R305091-05		6	BLK (QC	ID=44789	?)	0.23	231						411					JR,05,00
R305091-06		[ite (R3050 : ID=44791		0.16	260						411		28			JR,04,00
Nominal valu	ies an	d limi	its fro	m method		0.05	0 231	•					100		 180			

PROCEDURES	REFERENCE	GAMMA_GS
	CP-060	Soil Preparation, rev 4
	CP-100	Ge(Li) Preparation for Commercial Samples, rev 5

AVERAGES ± 2 SD	MDA 0.19 ± 0.19
FOR 5 SAMPLES	Y1ELD ±

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SAMPLE DELIVERY GROUP H2208

Test I Matrix SOLID SDG 7517 Contact Melissa C. Mannion

LAB METHOD SUMMARY

IODINE 129 IN SOIL **GAMMA SPECTROSCOPY**

Client Hanford Contract No. 630 Contract SDG H2208

RESULTS

RAW SUF-

SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Iodine 129 Preparation batch 7060-198 R305091-02 7517-002 B16W89 U R305091-04 7517-004 LCS (QC ID=44788) ok 7517-005 R305091-05 BLK (QC ID=44789) U R305091-07 7517-007 Duplicate (R305091-02) -

Nominal values and limits from method 200-PW-2/200-PW-4 OU - Borehole Soil

RDLs (pCi/g)

2.0

LAB SAMPLE ID	RAW TEST		IENT	SAMPLE	ID	MDA pCi/		PREP FAC	DILU- TION	YIELD %	EFF %		 		PREPARED	ANAL - YZED	DETECTOR
Preparation	batch	7060-1	98	2ø pro	ep error	10.0 %	Reference	Lab	Notebool	7060	pg.	198					
R305091-02		В1	6W89			2.5	1.00			50		1253		44	06/12/03	06/21	XSPEC-016
R305091-04		LC	s (QC	ID=4478	38)	1.4	1.00			97		909			06/12/03	06/22	XSPEC-004
R305091-05		BL	K (QC	10=4478	39)	1.3	1.00			100		908			06/12/03	06/22	XSPEC-016
R305091-07		Du	•	te (R305 ID=4479	5091-02) 91)	1.5	1.00			63		608		46	06/12/03	06/23	XSPEC-004
Nominal valu	ues an	d limit	s fro	m method		2.0	1.00			20-10	 5	300		180			

PROCEDURES REFERENCE 1129 SEP LEPS GS

CP-024

Iodine-129, Sample Dissolution, rev 3

CP-530

Iodine-129 Purification, rev 0

AVERAGES ± 2 SD MDA <u>1.7</u> ± <u>1.1</u> YIELD 78 ± 50 FOR 4 SAMPLES

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SAMPLE DELIVERY GROUP H2208

Test <u>U T</u> Matrix <u>SOLID</u>
SDG <u>7517</u>
Contact <u>Melissa C. Mannion</u>

LAB METHOD SUMMARY

URANIUM, TOTAL IN SOIL KINETIC PHOSPHORIMETRY (KPA)

Client	Hant	ford	
Contract	No.	630	
Contract	SDG	H2208	

RESULTS

LAB	RAW SUF-		Total	
SAMPLE ID	TEST FIX PLANCHET	CLIENT SAMPLE ID	Uranium 	
Preparation	n batch 7060-198			· · · · · · · · · · · · · · · · · · ·
R305091-01	7517-001	B16WB3	0.273	
R305091-03	7517-003	B16WB4	0.313	
R305091-04	7517-004	LCS (QC ID=44788)	ok	
R305091-05	7517-005	BLK (QC ID=44789)	U	
R305091-06	7517-006	Duplicate (R305091-01)	ok	

METHOD PERFORMANCE

	TEST !	SUF- FIX CLIENT	SAMPLE ID	MDA ug/g	ALIQ g	PREP FAC	DILU- Tion	X X					PREPARED	ANAL- YZED	DETECTOR
Preparation	batch	7060-198	2σ prep error	9.0 % 1	Reference	Lab	Notebooi	k 7060	pg.	198			·		
R305091-01		B16WB3		0.003	3 0.100							33	06/09/03	06/09	KPA-001
R305091-03		B16WB4		0.003	0.100							32	06/09/03	06/09	KPA-001
R305091-04		LCS (Q	C ID=44788)	0.032	2 0.100								06/09/03	06/09	KPA-001
R305091-05		BLK (Q	C ID=44789)	0.003	3 0.100								06/09/03	06/09	KPA-001
R305091-06		,	ete (R305091-01) C ID=44790)	0.003	3 0.100							33	06/09/03	06/09	KPA-001
Nominal valu	ies and	l limits fr	om method	1.0	0.100							180			

	PROCEDURES	REFERENCE	UTOT_KPA
i		CP-060	Soil Preparation, rev 4
		CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	·	CP-044	Sample Preparation for Total Uranium by Kinetic
			Phosphorimetry, rev 4
		CP-928	Total Uranium by Kinetic Phosphorimetry, rev 5

AVERAGES ± 2 SD MDA 0.009 ± 0.026
FOR 5 SAMPLES YIELD ±

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SAMPLE DELIVERY GROUP H2208

Test C Matrix SOLID SDG 7517 Contact Melissa C. Mannion

LAB METHOD SUMMARY

CARBON 14 IN SOIL LIQUID SCINTILLATION COUNTING

Client Hanford Contract No. 630 Contract SDG H2208

RESULTS

	SUF- FIX PLANCHET	CLIENT SAMPLE ID	Carbon 14	
Preparation batcl	n 7060-198			
R305091-02	7517-002	B16W89	U	
R305091-04	7517-004	LCS (QC ID=44788)	ok	
R305091-05	7517-005	BLK (QC ID=44789)	U	
R305091-07	7517-007	Duplicate (R305091-02)	- U	

Nominal values and limits from method 200-PW-2/200-PW-4 OU - Borehole Soil

RDLs (pCi/g)

50

METHOD PERFORMANCE

LAB SAMPLE ID	RAW TEST			SAMPLE ID	MDA pCi/s		PREP FAC	DILU-	YIELD %			 		PREPARED	ANAL - YZED	DETECTOR
Preparation	batc	706	0-198	2ø prep error	10.0 %	Reference	Lab	Notebook	7060	pg.	198	 				
R305091-02			B16W89		3.2	0.324			100	•	100		47	06/24/03	06/24	LSC-004
R305091-04			LCS (Q	C ID=44788)	9.7	0.324			100		10			06/24/03	06/25	LSC-004
R305091-05			BLK (Q	C ID=44789)	3.2	0.324			100		100			06/24/03	06/24	LSC-004
R305091-07			•	ate (R305091-02) C ID=44791)	3.0	0.364			100		100		47	06/24/03	06/24	LSC-004
Nominal valu	ues ar	nd li	mits fr	om method	50	0.324					50	 	180			

PROCEDURES REFERENCE C14_COX_LSC

CP-251

Tritium/Carbon-14 Oxidation, rev 5

AVERAGES ± 2 SD FOR 4 SAMPLES

MDA 4.8 ± 6.6

YIELD 100 ± 0

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SAMPLE DELIVERY GROUP H2208

Test	<u>H</u>	Mat	rix:	SOLID	_
SDG	<u>7517</u>				_
ontact	Melis	sa	c.	Mannion	_

LAB METHOD SUMMARY

TRITIUM IN SOIL
LIQUID SCINTILLATION COUNTING

Client <u>Hanford</u>
Contract <u>No. 630</u>
Contract <u>SDG H2208</u>

RESULTS

RAW SUF-LAR SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Tritium Preparation batch 7060-198 R305091-02 7517-002 B16W89 50.4 R305091-04 7517-004 LCS (QC ID=44788) ok R305091-05 7517-005 BLK (QC ID=44789) 0.336 R305091-07 7517-007 Duplicate (R305091-02) R305091-08 7517-008 Spike (R305091-02) ok Х Nominal values and limits from method RDLs (pCi/g) 400 200-PW-2/200-PW-4 OU - Borehole Soil

METHOD DEDECOMANCE

SAMPLE ID	RAW SUF- TEST FIX C	LIENT SA	MPLE ID	MDA pCi/g	ALIQ J g	PREP FAC	DILU-	YIELD %					PREPARED	ANAL - YZED	DETECTOR
Preparation	batch 7060-	198	2σ prep error	10.0 %	Reference	Lab I	Notebook	7060	pg.	198					
R305091-02	В	16W89		0.24	21.6			35		120		45	06/20/03	06/22	LSC-004
R305091-04	L(CS (QC II	D=44788)	0.28	20.0			33		120			06/20/03	06/22	LSC-004
R305091-05	В	LK (QC II)=44789)	0.27	20.0			33		120			06/20/03	06/22	LSC-004
R305091-07	Dı	•	(R305091-02) 0=44791)	0.24	22.0			35		120		45	06/20/03	06/22	LSC-004
R305091-08	Sį		05091-02) 0=44792)	0.23	22.0			35		120		45	06/20/03	06/22	LSC-004
Nominal valu	ues and limit	ts from m	nethod	400	20.0					25		180			

PROCEDURES REFERENCE 906.0 H3 LSC

CP-216 Tritium in Solid Samples by Azeotropic

Distillation, rev 6

AVERAGES ± 2 SD MDA 0.25 ± 0.043
FOR 5 SAMPLES YIELD 34 ± 2

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SAMPLE DELIVERY GROUP H2208

Test NI L Matrix SOLID

SDG 7517

Contact Melissa C. Mannion

LAB METHOD SUMMARY

NICKEL 63 IN SOIL
LIQUID SCINTILLATION COUNTING

U

Client Hanford
Contract No. 630
Contract SDG H2208

RESULTS

LAB RAW SUF-

SAMPLE ID TEST FIX PLANCHET CLIENT SAMPLE ID Nickel 63

Preparation batch 7060-198

R305091-02 7517-002 B16W89 U
R305091-04 7517-004 LCS (QC ID=44788) ok
R305091-05 7517-005 BLK (QC ID=44789) U
R305091-07 7517-007 Duplicate (R305091-02)

Nominal values and limits from method

RDLs (pCi/g) 30

200-PW-2/200-PW-4 OU - Borehole Soil

METHOD PERFORMANCE

RAW SUF-MDA ALIQ PREP DILU- YIELD EFF COUNT FWHM DRIFT DAYS ANAL-LAB SAMPLE ID TEST FIX CLIENT SAMPLE ID FAC TION % % min keV KeV HELD PREPARED YZED DETECTOR pCi/g Preparation batch 7060-198 2σ prep error 10.0 % Reference Lab Notebook 7060 pg. 198 R305091-02 B16W89 2.6 0.500 76 100 36 06/10/03 06/13 LSC-004 R305091-04 LCS (QC ID=44788) 2.3 0.500 98 77 06/10/03 06/13 LSC-004 97 R305091-05 BLK (QC ID=44789) 2.0 0.500 100 06/10/03 06/13 LSC-004 R305091-07 Duplicate (R305091-02) 2.4 0.500 82 100 36 06/10/03 06/13 LSC-004 (QC ID=44791) Nominal values and limits from method 30 0.500 30-105 50 180

	PROCEDURES	REFERENCE	NI63_LSC
		CP-060	Soil Preparation, rev 4
į		CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
		CP-431	Nickel-63 Purification, rev 5

AVERAGES ± 2 SD MDA 2.3 ± 0.50 FOR 4 SAMPLES YIELD 88 ± 22

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SDG <u>7517</u> Contact <u>Melissa C. Mannion</u>

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SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

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LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 - 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

- 2. The error of ADDED.
- 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

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DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 - 1. A fixed percentage specified in the protocol.

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DUPLICATE

- 2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.
- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 - The errors of the two RESULTs, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

- 2. The error of ADDED.
- 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits

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MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, Nodata, LOW or HIGH, with the last two underlined. 'No data'

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means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Prepareation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

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FH-Central Plates	n Project	CI	IAIN OF CUST	ODV/S	AMDIE	ANALY	ZTC	DE.	OUEST		F0:	3-006-86	Page 1 c	of <u>1</u>
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Project Designation 200-PW-2/200-PW-4 OU - B	orehole Soil Sampling	Sampli	ing Location A-37 (C4106); (237.5'-2	400 H	2208(7517		SAF F03-0		A	ir Quality	,	30 E	Days
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Collector Johansen/Pope/Pfister	r	Comp	any Contact Hulstrom	Telepho 373-3	ne No.			Project Coordinate TRENT, SJ	Price Code	8N I	Data Turnaround
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LABORATORY Reco	ceived By			Ti	itie					Date/I	lime
FINAL SAMPLE DisposiTION	posal Method				-	Dispo	sed By	 -		Date/	Time

FH-Central Plates	nu Project	CI	HAIN OF CUST	ODY/S	AMPLE	ANAL	YSIS	REQUES	ST	F0	3-006-87	Page 1	of 1
Collector Johansen/Pope/Pfister		Сотра	any Contact Hulstrom	Telephor	ne No.			Project Coor TRENT, SJ		Price Code	8N	Data Tur	
Project Designation 200-PW-2/200-PW-4 OU - Bo	orehole Soil Sampling	Sampl 216	ing Location -A-37 (C4106); (272.5'-2	275) H2	208.	7517)		SAF No. F03-006		Air Quality	y 🗀	30 I	Days ———
Ice Chest No.	-02008	Field I	Logbook No. F-N-3361		COA 117504ES			Method of Si Governmen	ipment t Vahiele	FED E	X		
Shipped To 1705 5-12 Waste Sampling & Character	-03 EDUSTIN	Offsite	e Property No. A	330	258			Bill of Ladir	ng/Air Bill	No. 56	\$ 65/	$\mathcal{C}_{\mathcal{L}}$	
POSSIBLE SAMPLE HAZA Special Handling and/or S			Preservation Type of Container No. of Container(s) Volume	Gs* 586 4-54-45 2 3 40mL	Cool 4C aG I See 4-20-46 Heart-	Cool of Type Grant Cool of Coo	G/I I I I I I I I I I I I I	30 -43 Ho					
	SAMPLE ANAI	YSIS	<u>L</u>	See item (1) is Special Instructions	Seculari (2) in Special Instructions.	See item (3) in Special Instructions.	See item Speci Instruct	(4) in					
Sample No.	Matrix *	Sample Date	Sample Time										
B16WB4	SOIL	5/8/03	1025	<u> </u>	X	X		<u> </u>			 	 	-
		<u> </u>	···	- '		<u> </u>			<u> </u>		<u> </u>	 	<u> </u>
		<u> </u>	•	 	 	 			-			<u> </u>	
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Relinquished By Removed From Relinquished By Removed From Relinquished By Removed From Relinquished By Removed From Relinquished By Removed From Relinquished By Removed From Relinquished By Removed From SIGALE STATE LABORATORY Received By	Date/Time S/8/03 11 Date/Time S/8/03 3 FH Date/Time S/8/03 Date/Time S/8/03 3000 Date/Time 3 000 13 000	Received By/Sto Received By/Sto Received By/Sto Received By/Sto Received By/Sto	SHOWING 5/8	ate/Time ate/Time ate/Time ate/Time ate/Time ate/Time	(1)-(2)-(2)-(3)-(4)-(4)-(4)-(4)-(4)-(4)-(4)-(4)-(4)-(4	Semi-VOA - 8266A (Semi-VOA - 82 February - Alcoholz, Glyer Gamma Spectrama Spectrama Spectrama Spectrama Spectrama Spectrama, Barium, Broad (Add-on) (Eitrite, Phosphat (Soil) - 9045; rowonia - 3 sonnel not aunquish samp	s to repor TCL); VA 170A (TCL) -WIPH- ola, & Ken oscopy (Cl- on (Anti um-241; 1 sismuth, E s, Sulfate on 2 Cur 50.3; vailable les from	both kerosene a OA. \$260A (Add L); Semi VOA. THI Gasoline loncs - 8015 (Dr esium-137, Cobe mony-125, Cesiu sotopie Uramium Chromium, Cope broon); IC Anion Cyanide (Total '4-1471; Total (Tanin to the 3728	Range William 134, Radia Trace Lind S - 300 0 (C)	ge compounds fro stanouc, Benzyl al- (-0n) (2-Entroxye (-10-1) (2-	cohol, n-Butyth manot, Triburyt 82 ertsanol} m-154, Europia 228, Tin-126}; 9-8 (Complete) ver, Uranami; Nitrogen in Nitr (Triburgen in a	m-155}; Isotopic {Antimony, ICP Metals- ate, Nitrogen	Matrix * S-Soil SE-Sodiment RA folds Ju-Slude V.= Wate OOS A-Air DS-Drum Liquids TI-Tissue WteWipe Lu-Liquid Va-Vegetation X-Other
SECTION	\sim \sim \sim		CBRLING S	selles"	Re	f# <u>//A</u> on_	<u>び //</u>	3/03				Date Time (<u>び</u>
FINAL SAMPLE Disposal M DISPOSITION	ethod 🗸					Disp	osed By					Date/Time	

© EBERLINE

ANALYTICAL SERVICES GROUP

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

Client:	FIR			_ Date/T	ime receive	d 1000	5-	W-CS
CoC No	. F03-0	006 - 86,8	7,72					·
}	ner I.D. No. <u>GR</u>	•		AT (Davs)	us p	.O. Receive	d Yes [] No [1
			INSPEC					
1.	Custody seals on	shipping conta	ainer intact?		Yes IV	No []	N/A []
2.	Custody seals on	shipping conta	ainer dated 8	signed?	Yes [/	No []	N/A []
3.	Custody seals on				Yes [1]		1	N/A[]
4.	Custody seals on	sample contai	ners dated 8	k signed?	Yes []	No [}	N/A []
5.	Packing material	is:		·	Wet[]	Dry [11	
6.	Number of sample	es in shipping	container: _	<u> </u>				
7.	Number of conta	iners per samp	le:)	
8.	Paperwork agree	s with samples	?		Yes [1]	No [1	
9.	Samples have: T	-						-
10.	Samples are: In	good conditio	n [V] Leal	klng[]	Broken Co	ontainer [Missi	ng []
11.	Samples are: Pre	served [] /	Vot preserve	d [YPI	reservative .			
12.	Describe any and	malies:					·	
								
1			<u></u>	······································				
13.	Was P.M. notifie	ud of any anom	alies? Yes		No []	Date	(M)	Orl
14.	Received by	an cy		Date:	5-14-0	<u>ک</u> Time:	·· (U	<u> </u>
Custom	er Sample			Custome	r Sample			
	No. cpn	n mR/hr	wipe	N	0,	cpm	mR/hr	wipe
R19	W83 Z\$				······································			
-B16	mgg (200							****************
-D-1-6								
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Ion Cha	mber Ser. No.			<u>.</u> c	alibration d	late		
				-		*		
Aipna M	leter Ser. No	995		_	alibration d	11) (ن د	
Beta/Ga	mma Meter Ser. N	o	71		alibration d	ate	クレイ	2-
Form SC	P-01.2, 02-11-03			"6	over 50 yes	ers of qualit	y nuclea	r services"



30 June 2003

Mr. Steve Trent Fluor Hanford Inc. 825 Jadwin Ave. Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package

Dear Mr. Trent:



Enclosed are the hard copy analytical reports for the batch number/fraction indicated (marked X) in the following table:

LvLi Batch #	0305L403
SDG#	H2208
SAF#	F03-006
Date Received	5-14-03
# Samples	3
Matrix	Soil
Volatiles	X
Semivolatiles	X
Pest/PCB	X
DRO/GRO/KRO	X
Herbicides	
GC Alcohol	X
Metals	X
Inorganics	X

The electronic data deliverable (EDD) will be emailed shortly. If you have any questions, please don't hesitate to contact me at (610) 280-3012.

Sincerely,

Lipnville Laboratory Incorporated

Orlette S. Johnson Project Manager

Lionville Laboratory, Inc. VOA ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

CLIENT ID	LVL	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002		s	03LVJ057	05/08/03	N/A	05/20/03
B16WB4	002	MS	S	03LVJ056	05/08/03	N/A	05/17/03
B16WB4	002	MSD	S	03LVJ056	05/08/03	N/A	05/17/03
LAB QC:							
VBLKSE	MB1		s	03LVJ057	N/A	N/A	05/20/03
VBLKSE	MB1	BS	s	03LVJ057	N/A	N/A	05/20/03
VBLKRT	MB1		s	03LVJ056	N/A	N/A	05/17/03
VBLKRT	MB1	BS	s ·	03LVJ056	N/A	N/A	05/17/03





Client: TNU-HANFORD F03-006

LVL#: 0305L403

SDG/SAF # H2208/F03-006

W.O. #: 11343-606-001-9999-00

Date Received: 05-14-2003

GC/MS VOLATILE

One (1) soil sample was collected on 05-08-2003.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for client specified volatile target compounds on 05-17,20-2003.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
- 2. The sample was analyzed within holding time.
- 3. Non-target compounds were detected in the sample.
- 4. One (1) of twenty-one (21) surrogate recoveries was outside EPA QC limits. The analysis of associated matrix spike sample fulfills the reanalysis requirement of sample B16WB4 MSD.
- 5. All matrix spike recoveries were within EPA QC limits.
- 6. All blank spike recoveries were within EPA QC limits.
- 7. The method blank 03LVJ056-MB1 contained the common laboratory contaminants Methylene Chloride and Acetone at levels less than the CRQL.
- 8. Internal standard area criteria were not met for sample B16WB4 MSD. The analysis of associated matrix spike sample fulfills the reanalysis requirement of sample B16WB4 MSD.
- 9. A spectral search was conducted for the compound 2-Pentanone; this compound was not identified in the sample.
- 10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor

President

Lionville Laboratory Incorporated

som\group\data\voa\tnu-hanford\0305-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1.7 pages.

GLOSSARY

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 31.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NO = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TlCs), where the identification is based on a mass spectral library search. It is applied to all TlC results. For generic characterization of a TlC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions
		and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.



Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Report Date: 06/20/03 09:14 Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1a RFW Batch Number: 0305L403 D

	Cust ID:	B16WB4	ı	B16WB4	:	B16WB4		VBLKSE		VBLKSE BS		VBLKRT	
Sample	RFW#:	002	!	002 MS	,	002 MSD		03LVJ057-M	в1	03LVJ057-M	m 1	03LVJ056-M	ma 1
Information	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.0	0	1.0	19	1.0	4	1.0	0	1.0	0	1.0	00
	Units:	ug/F	g	ug/K		ug/K	g	ug/K	q	ug/k	ζq	ug/K	ζq
	Toluene-d8	99	ક્ષ	100	ક	106	%	100	8	98	ક	98	8
	fluorobenzene	108	*	119	%	126 *	ક	114	왐	107	ક	113	ક
	loroethane-d4	100	ક	136	*	140	૪	99	૪	98	왕	123	ક
=======================================		**======	=fl=			*******	=fl:		=f1	========	=f1		==fl
Chloromethane		10	Ü	11	U	11	Ū	10	Ū	10	U	10	Ū
		10	U	11	U	11	U	10	U	10	U	10	U
Vinyl Chloride		10	U	11	U	11	U	10	U	10	U	10	U
Chloroethane		10	U	11	U	11	U	10	U	10	U	10	Ü
Methylene Chloride_		5	U	7	В	6	В	5	U	5	U	1	J
		2	J	11	U	8	JB	10	U	10	Ū	7	J
Carbon Disulfide		5	U	6	U	6	U	5	U	5	U	5	σ
1,1-Dichloroethene_		5	U	127	ક	136	*	5	U	98	왕	5	U
1,1-Dichloroethane		5	Ū	6	Ü	6	U	5	Ū	5	Ü	5	U
1,2-Dichloroethene (total)	5	Ū	6	Ū	6	U	5	U	5	Ū	5	U
Chloroform		5	U	6	U	6	U	5	U	5	Ū	5	U
1,2-Dichloroethane_		5	U	6	U	6	U	5	U	5	U	5	U
		10	U	11	U	11	Ü	10	U	10	U	10	U
1,1,1-Trichloroethan	ie	5	U	6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride	•	5	Ū	6	U	6	U	5	U	5	U	5	U
Bromodichloromethane		5	U	6	Ū	6	U	5	Ų	5	U	5	Ū
1,2-Dichloropropane_		5	U	6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloroprop	oene	5	U	6	U	6	U	5	U	5	U	5	U
_		5	U	93	8	97	8	5	U	105	8	5	Ū
Dibromochloromethane		5	Ü	6	Ū	6	U	5	U	5	U	5	Ū
1,1,2-Trichloroethan	ne	5	U	6	Ū	6	U	5	U	5	U	5	U
Benzene		5	U	96	8	100	૪	5	U	94	8	5	U
Trans-1,3-Dichloropr		5	U	6	Ū	6	U	5	บ	5	U	5	Ū
		5	U	6	Ų	6	Ü	5	U	5	U	5	U
4-Methyl-2-pentanone		10	U	11	Ū	11	Ü	10	U	10	U	10	Ü
		10	U	11	U	11	U	10	Ū	10	Ū	10	Ū
Tetrachloroethene_		5	U	6	U	6	U	5	Ū	5	Ü	5	Ü
1,1,2,2-Tetrachloroe	ethane	5	U	6	U	6	U	5	Ū	5	Ū	5	Ū
Toluene		5	Ū	107	ક્ષ	117	8	5	Ū	98	8	5	U
								_	-		-	5	_

^{*=} Outside of EPA CLP QC limits.

RFW Batch Number: 0305L40	3 Clie	nt: TNUH	<u>ANFORI</u>	F03-006	H220	8 Work C	rde	r: 11343606	001	Page: 1b			
	Cust ID:	B16WB4		B16WB4	ı	B16WB4	•	VBLKSE		VBLKSE BS		VBLKRT	1
	RFW#:	002		002 MS	;	002 MSD)	03LVJ057-M	B 1	03LVJ057-M	B 1	03LVJ056-M	1 B1
Chlorobenzene		5	Ū	105	ફ	111	ક	5	U	100	용	5	U
Ethylbenzene		5	Ü	6	U	. 6	U	5	U	5	U	5	U
Styrene		5	U	.6	U	6	Ū	5	U	5	Ū	5	U
Xylene (total)		5	Ü	6	U	6	U	5	U	5	Ū	5	U
N-butylbenzene		5	Ū	6	U	6	U	5	U	5	U	5	Ū
*= Outside of EPA CLP QC	limits.												

Volatiles by GC/MS, HSL List

Report Date: 06/20/03 09:14 Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 2a RFW Batch Number: 0305L403

Cust ID: VBLKRT BS

*= Outside of EPA CLP QC limits.

Sample	RFW#: 03LVJ05 6	5-MB	1				
Information Ma	trix: SOI	ſĹ					
:	D.F.: 3	1.00					
បៈ	nits: ug	g/Kg			-		
Tolue	ne-d8 101	L :	 *				
Surrogate Bromofluorobe	nzene 111	L	४				
Recovery 1,2-Dichloroetha	ne-d4 121	L :	ફ				
	=============	===	fl====	======fl== === ==	====fl======	=== = fl=====	======f1========
Chloromethane		10	U				
Bromomethane		10	U				
Vinyl Chloride		10	U				
Chloroethane		10 1	U				
Methylene Chloride		2	JB				
Acetone		7	JB				
Carbon Disulfide		5	U				
1,1-Dichloroethene	123	3	ક .				
1,1-Dichloroethane		5	U				
1,2-Dichloroethene (total)_		5	U				
Chloroform_		5	U				
1,2-Dichloroethane		5	U				
2-Butanone		10	U				
1,1,1-Trichloroethane		5	U				
Carbon Tetrachloride		5	U				
Bromodichloromethane		5	Ū				
1,2-Dichloropropane		5	Ü				
cis-1,3-Dichloropropene		5	U				
Trichloroethene	101	ì	ક				
Dibromochloromethane		5	U				
1,1,2-Trichloroethane		5	U				
Benzene	97	7	왐				
Trans-1,3-Dichloropropene		5	U				
Bromoform		5	Ū				•
4-Methyl-2-pentanone		10	U				
2-Hexanone		10	ប				
Tetrachloroethene		5	U				
1,1,2,2-Tetrachloroethane		5	U				
Toluene	104	4	ક				

RFW Batch Number: 0305L403 Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 2b

Cust ID: VBLKRT BS

RFW#: 03LVJ056-MB1

Chlorobenzene	104	%	
Ethylbenzene	5	U	
Styrene	5	U	
Xylene (total)	5	U	
N-butylbenzene	5	U	

^{*=} Outside of EPA CLP QC limits.

1E VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

•	
!	
Distriction 4	

EPA SAMPLE NO.

TENTATIVELY IDENTIFIED COMPOUNI	
Lab Name: <u>Lionville Labs, Inc.</u> Contract: <u>113</u>	B16WB4 343606001
Lab Code: Lionvi Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>SOIL</u>	Lab Sample ID: 0305L403-002
Sample wt/vol: $\underline{5.00}$ (g/mL) \underline{G}	Lab File ID: <u>1052005</u>
Level: (low/med) <u>LOW</u>	Date Received: 05/14/03
% Moisture: not dec4	Date Analyzed: 05/20/03
Column: (pack/cap) <u>CAP</u>	Dilution Factor: 1.00
	NCENTRATION UNITS: g/L or ug/Kg) <u>ug/Kg</u>

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
		======		
1.	ALKANE	7.360	6	JB

1E

VOLATILE ORGANICS ANALYSIS SHEET

EPA	SAMPLE	NO.
	· · · · · · · · · · · · · · · · · · ·	

TENTATIVELY IDENTIFIED COMPOUNDS	
Lab Name: Lionville Labs, Inc. Contract: 11343	VBLKSE 606001
Lab Code: Lionvi Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>SOIL</u>	Lab Sample ID: 03LVJ057-MB1
Sample wt/vol: _5.00 (g/mL) G	Lab File ID: <u>1052004</u>
Level: (low/med) <u>LOW</u>	Date Received: 05/20/03
% Moisture: not dec0	Date Analyzed: 05/20/03
Column: (pack/cap) CAP	Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: $\underline{1}$ (ug/L or ug/Kg) $\underline{ug/Kg}$

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	 Q	
			======	=======================================	====	
	1.	ALKANE	7.263	8	J	
l			l <u></u> .		İİ	

10

VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	EPA	SAMPLE	NO.
V	BLKF	₹T	

Lab Name: Lionville Labs, Inc. Contract: 113436	VBLKRT
Lab Code: Lionvi Case No.:	SAS No.: SDG No.:
Matrix: (soil/water) <u>SOIL</u>	Lab Sample ID: 03LVJ056-MB1

Level: (low/med) LOW Date Received: 05/17/03

Sample wt/vol: <u>5.00</u> (g/mL) <u>G</u> Lab File ID: <u>j051706</u>

% Moisture: not dec. ___0 Date Analyzed: 05/17/03

Column: (pack/cap) CAP Dilution Factor: 1.00

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	
=======================================		======	========	=====
1.			j	i i
		l		İi

									(b) 1	'OA	BNI	P	(Ci)	Mr.	I'MIU	1 <i>V</i>	ıG	/ V I CAL	,		I		
Lionville Labor	atory Us	se Only	Custo	dy Tra	nsfe	r F	lec	ord/L	.ab \	No	rk	Re	que	est	Page_	L of	1	-		3	: \		d
(7) 2 + -				FIELD PER															4	f	V		<u> </u>
<u>030s</u>	LAC	3		FIELD PER	SUNNE	Li UL	JIMP LE	IE ONL	I SHAD	<u>Ā-Ċ</u>	C_{-}		E.	-G				H	T	TIC	SVILLE LA	BOKATOR	INC.
ClientT	Nu-	Hamso	rd Fo)3-00L			Refrige	rator#		ı	2			•				2	2_	7			
	. Sampi	ling Date _			· · · · · ·		#/Type	Container	Liquid	3												-	
Project #	(1	343-6	06-00-9	999-00						300	le q		3	لوما				104	la	lag			
Project Conta	ct/Phon	e#				_	Volume	•	Liquid	-				<u> </u>		├							
Lionville Labo	ratory i	Project Ma	nager <u>Ou</u>	atte-go	man		Preserv	etives	Solid	40	<u>aso</u>			40				130	<u>ن</u> 0	196			
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CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST Company Contact Tolephone No. Treet Cordinator TRENT, S.J. Price Coordinator TRENT, S.J. Price Coordinator TRENT, S.J. Price Code 8 N Data Turnaroumb 30 Days Treet Chain Sample Location 200-PW-4 (U. Borchole Soil Sampling 216-A-37 (Ca106); (2375-240) Sample No. Interval of Shipment Covernment Vehicle Shipped Toryth S.J. (12.03) No. of Container(i) Type of Container(i) Special Handling and/or Storage Type of Container(i) Sample No. Sample No. Matrix Sample No. Matrix Sample No. Matrix Sample Date Sample Time CHAIN OF POSSESSION Sign/Prist Names Sign/Prist Names Sign/Prist Names Tober Time Date/Time Special Handling and/or Storage CHAIN OF POSSESSION Sign/Prist Names The Montain Container (i) Sample No. CHAIN OF POSSESSION Sign/Prist Names The Montainer (i) Sign/Prist Names The Montainer (i) Special Library is to report between and direct name compound from WTH-D malyzis Sample No. CHAIN OF POSSESSION Sign/Prist Names The Montainer (i) Special Library is to report between and direct name compound from WTH-D malyzis Special Library is to report between and direct name compound from WTH-D malyzis Special Library is to report between and direct name compound from WTH-D malyzis Special CHAIN OF POSSESSION Sign/Prist Names The Montainer (i) Special Library is to report between and direct name compound from WTH-D malyzis Special CHAIN OF POSSESSION Sign/Prist Names The Montainer (i) Special Library is to report between and direct name compound from WTH-D malyzis Special CHAIN OF POSSESSION Sign/Prist Names The Montainer (i) Special CHAIN OF POSSESSION Sign/Prist Names The Montainer (ii) Special CHAIN OF POSSESSION Sign/Prist Names The Montainer (ii) Special Chain Chain (in) Special Chain (ii) Special Chain (iii) Special Chain (iii) Special Chain (iii) Special Chain (iii) Special Chain (iii) Special Chain (iii) Special Chain (iii) Special Chain (iii) Special Chain (iii) Special Chain (iii) Spec		$i \lambda_i$	4/				,,							
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26-A37 (CA106); (237.5-240) 10 COA	Collector Johansen/Pope/Pfiste	: :								linator	Price Code 8N			~
The Cheft No. Sec. 2 404 5130 5 Field Laphost No. 117504510 175045	Project Designation 200-PW-2/200-PW-4	I OU - Borehole Soil Sampling				-	Air Quality		30 1	Days —				
Shipped To 1777 51/21/3 Reaco Offsite Property No. 40 30 2 9 Bill of Lading/Art Bill No. 10 2 9 Preservation Reacon to 17 pp of Container (1) 2 pp of Container (2) 3 1 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 1		RC 02 404	171.44.4	Logbook No.			10				_			
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FINAL SAMPLE Disposal Method Disposal Method Disposal Method	Relinquished By/Removed Relinquished By/Removed Relinquished By/Removed Relinquished By/Removed REF A 372 Relinquished By/Removed S S A E A S C LABORATORY R	From Date/Time	Received By/Sto Received By/Sto Received By/Sto Received By/Sto Received By/Sto Received By/Sto	red in A 3728 5	ate/Time 3 /30 (ate/Time	(1) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	he laboratory is VOA - 8260A (Seni-VOA - 82 Diesel Range Alcohols, Glyce Jenna Spectre Marchard Americi Marchard Microsoft Jenna Micros	TCL); VC.70A (TCL); VC.70A (TCL); VC.70A (TCL); VC.70A (TCL); & Keloscopy (Cl. 10 Cl.	th both kerosene and A = 8260A (Add-L); Semi-VOA = 1 D; TPH-Gasoline tones = 8015 [1-Bi- consum-127, Cubal mony-125, Cesium notopic Uranium; Cadmum, Chromit DA (Add-un) (Biss in Nitrile, Phosph in); pH (Goil) = 90 ie to om the 3728	On) {2-Per 3270A (Ade Range - WI stanol, Diet 3-60, Europ 1-134, Radi Trace Elem 1911, Copper 1911, Doron ate, Sulfate	atanone, Benzyl ale d-On) {2-Butoxyeth FPH-G; PCBs - 808 hyl ether, Ethylene num-152, Europtum num-226, Radium-2 conte ICPAS - 200 r, 1-zad, Meroury, N	ohol, n-Butylbe nanol, Tributyl p 12 glycol, Methan 154, Europium 28, Thi-120), 1 8 (Complete) I liokal, Salanium O (Chloride, F 355.2, Cations	nzene} shosphate}; ol} a=155); Rotopic Antimogy, Silver, weride, —(IC) -	SE-Sediment SO-Solid SI-Shadge W = Water O-Oil A-Air DS-Drum Solids PAT Sed Toylord Toylids Toylord Toylids Toylord Toylids Toylord Toylids Toylord Toylids Toylord Toylids Toylord Toylids Toylord Toylids Toylord Toylids
DISPOSITION	FINAL SAMPLE	Disposal Method	·····	-			Dispo	osed By		. <u></u>]	Date/Time	

FH-Central Platea	u Project	C	HAIN OF CUST	ODY/S	AMPLE	E ANAL	YSIS	REQUI	EST	F	3-006-87	Page 1	of 1
Collector Johansen/Pope/Pfister		Comp	any Contact Hulstrom	Telepho 373-3	ne No.			Project Co	ordinator	Price Code	8N	Data Tu	rnaround
Project Designation 200-PW-2/200-PW-4 OU - Bo	orehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')							Air Qualit	Air Quality 🗌 30		Days
ice Chest No. ERC	02404 2-005 100 127	Field	Logbook No. F-N-3361		COA 117504ES	310		Method of Governm	Shipment ent Vehicle	!			
Shipped To TYD 5-12- Waste Sampling & Character	03 0	Offsit	e Property No.	30 2	29			Bill of Lac	ling/Air Bil	INO. SE	8 os	به ح	
POSSIBLE SAMPLE HAZA	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool						
Special Handling and/or S	torage		Type of Container	Gs* 1704-50-65	2G	Gs* mg-4-20 -ed	G/)	3/					
			No. of Container(s)	73	1 1954-30-65	73	PACE AT						
			Volume	40mL	250mL	40mL	1304 5400	1			100		· ·
	SAMPLE ANAI	LYSIS		See item (1) in Special Instructions.	Sec item (2) in Special Instructions.	See item (3) in Special Instructions	Se sum	(4) in al ions.					
Sample No.	Matrix *	Sample Date	Sample Time										
B16WB4	SOIL	5/8/03	1025	X	X	X	X						
				<u> </u>							<u>.</u>	<u>.</u>	
CHAIN OF POSSESSIO	N	Sign/Prin	t Names	<u> </u>	SPEC	CIAL INSTI	RUCTIO	ONS .				<u> </u>	Matrix *
Relinquished By/Removed From J-5. FS/E Hgg-	Date/Time 8/#3) (</td <td>Received By/Spor</td> <td></td> <td>ste/Time</td> <td>••т</td> <td>he laboratory is</td> <td>s to report</td> <td>both kerosene</td> <td></td> <td>ige compounds from stanone, Benzyl ak</td> <td></td> <td>-</td> <td>S=Soil SE=Sodiment</td>	Received By/Spor		ste/Time	••т	he laboratory is	s to report	both kerosene		ige compounds from stanone, Benzyl ak		-	S=Soil SE=Sodiment
Relinduished By Removed France	Date/Time/	R SCENIVA NO	18 JOHNAN D	SK 031	300 (2) S	iemi-VOA - 82 Diesel Range -	?70A (TCI - WTPH-I	L); Semi-VOA D; TPH-Gasoli	8270A (Add se Range - Wi	i-On) {2-Butoxyet PH-G; PCBs - 80	hanol, Tributyl p 82	nzene; shosphate);	SO=Solid SI=Siedge W = Water
DYRAMA BVIZYKOLOV	Date/Time 5/8/03/	HE SALONIO	Elevician 5/	17031	and (4).	iamma Spectm	scony (C	esium-137. Ca	salt-60. Europ	thylene glycol, Me tun-152, Europiun um-226, Radium-2	a-154. Europeun	1-155); leteoic	O-Oil A-Oil Disposite Disposite
Relinquished By/Removed From - Date/Time Recoved By/Stored by 3728 5/8/03 1415							un-241, t ryllium, C	sotopic Uraniu Ibromium, Cop	n, Trace Elem per, Lead, Mit	eats ICP/MS - 200 roury, Nickel, Silv	.8 (Complete) (Antimony, -	L-Liquid
Relinquished By/Removed From	Date/Time 303 (300)	Received By/Stor	red In Da	te/lime	in 14t	in Mitrite, Phosphate, Sulfate]; Cyanide (Total) - 335.2; Cations (IC) - 300.7 [Nitrogen in animonium]: X-Other							V=Vegetation X=Other
Relipquished By/Removed From	1303 130	Received By/Stor	red In Da	ate/Time		re	linquish	not availab samples fro	m the 3728				,
LABORATORY Received By SECTION		5 1403 073	D yman	5.14.03il	1e735	R	ef# <u>16</u>	<u></u>	12/63	_	D	Pate/Time	
FINAL SAMPLE Disposal Me	thod					Dispo	sed By					Date/Time	

FH-Central Platea	CI	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					F03	-006-72 Page	1 of 1		
Collector Johansen/Pope/Pfister			Company Contact Telephone No. LC Hulstrom 373-3928					Project Coordinator TRENT, SJ	Price Code	8N Data	Turnaround
Project Designation 200-PW-2/200-PW-4 OU - B	orehole Soil Sampling	Sampli	Sampling Location 216-A-37 (C4106); (272.5'-275')				SAF No. F03-006	Air Quality	4 5	5 Days	
Ice Chest No. ERC O		HNF	Field Logbook No. COA HNF-N-3361 117504ES10					Method of Shipment Federal Express			
Shipped To RECRA 442 (-EDERLINE SERVICES (Formerly TMA). 4/22/03			Offsite Property No. A030229					Bill of Lading/Air Bill No. SEE OSPC			
POSSIBLE SAMPLE HAZARDS/REMARKS			Preservation	Cool 4C	Cool 4C	Coni 4C	Non	/			
 Special Handling and/or S	Storage		Type of Container	aG	₽G	aG	aG	/		·	
			No. of Container(s)	1 120mL	l 60mL	1 120mL	60m				
	,		Volume	Chromium	NO2/NO3 -	Oil & Grease -	See item	/			
SAMPLE ANALYSIS				Hex - 7196	353.2	413.1	Speci Instructi	iù /			
								Mon	Tieto:		
Sample No.	Matrix *	Sample Date	Sample Time								
B16W89	SOIL ≰	<u> </u>	1 1025	<u> </u>	1 *	1	<u> </u>		BIGWD	5	
				 			\vdash				
				 		+					
CHAIN OF POSSESSION Sig Relinquished By/Removed From III Date/Time 115 Recived TMD/WOOD AMOUNTS 58 3 145 Recived			t Names reduling ERC Da - IR NICLSON 5-9	ate/Time	SPE 1-12	CIAL INSTR The laboratory is ort both kerosene	tUCTIC) to achie ; and dies	ONS SAC 7/ we a detection limit of 50.0 sel range compounds from V	DCVg for Carbon-14: WTPH-D analysis.	** The laboratory is to	Matrix * S=Soil SE=Sediment
Relinquished By/Removed From	Reserved By/Ston							SONGHIA			
Relinquished By/Removed From REFIA 3728 S	Received By/Stor	29 Dele 51		1300			- / /	, , ,		A=Air DS=Drum Solids DL=Drum Liquids	
Signiffed 51303 1300 FED							ilable to			T=Tissue WI=Wipe L=Liquid V=Vegetation	
Relinquished By/Removed From Received By/S S-/4. Q-3 Relinquished By/Removed From Date/Time Received By/S Received By/S			red In Dr Dr. 4 5:/4:0 red In Dr	relinquish samples from the 3728 Ref # 1 on 5 /13 /03 Date/Time						X=Other	
LABORATORY Received B SECTION	iy 1			T	itle					Date/Time	
FINAL SAMPLE Disposal M DISPOSITION	sethod					Dispo	osed By			Date/Time	

LIONVILLE LABORATORY INCORPORATED O SAMPLE RECEIPT CHECKLIST

JENT: TNU Horderd

rchase Order/Project:

DATE: 5.14.03

F# /)SOW# / Release #:

F03-006

iboratory SDG #:

03051403

TE:	ALL ENTRIES MARKED "NO" MUST BE		THE COMM	ENT SECTION	ν .
1.	Custody seals on coolers or shipping container intact, signed and dated?	XYes	□ No	□ N/A	see Comment #
2.	Outside of coolers or shipping containers are free from damage?	TI Yes	D No	□ N/A	see Comment #
3.	Airbill # recorded?	Yes	□ No	□ N/A	see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	T Yes	□ No	D N/A	□ see Comment #
5.	Sample containers are intact?	Deves	□ No	□ N/A	□ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	19 Yes	D No.	□ N/A	D see Comment
7.	All samples on coc received?	XYes	□ No	□ N/A	✓ □ see Comment
8.	All sample label information matches coc?	Yes	D No	□ N/A·	See Comment
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	□ Yes	□ №	ONA	☐ see Comment
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	b Yes	. □ N°	D N/A	D see Comment
11.	Where applicable, bar code labels are affixed to coc?	D Yes	□ N ₀	VINCE	See Comment
12.	coc signed and dated?	Yes Yes	□N₀	□ N/A	□ sec Comment
13.	coc will be faxed or emailed to client?	E Yes	□ No	D N/A	D see Commen
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	D Yes	. □ No	M N/A	🗀 see Commen

Cooler # / temp (°C) and Comments:

ERC 02.404 / 1.2"

Laboratory Sample Custodian:

Laboratory Project Manager:

Rende

Lionville Laboratory, Inc. BNA ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002 002 MS	S S	03LE0580 03LE0580	05/08/03 05/08/03	05/15/03 05/15/03	06/09/03 06/09/03
B16WB4 B16WB4	002 MSD	S	03LE0580	05/08/03	05/15/03	06/09/03
LAB QC:						
SBLKTO SBLKTO	MB1 MB1 BS	s s	03LE0580 03LE0580	N/A N/A	05/15/03 05/15/03	06/09/03 06/09/03





Client: TNU-HANFORD F03-006

LVL#: 0305L403

SDG/SAF # H2208/F03-006

W.O. #: 11343-606-001-9999-00 Date Received: 05-14-2003

SEMIVOLATILE

One (1) soil sample was collected on 05-08-2003.

The sample and its associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 05-15-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 06-09-2003.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
- 2. The sample was extracted and analyzed within required holding time.
- 3. Non-target compounds were detected in the sample.
- 4. Six (6) of thirty (30) surrogate recoveries were outside EPA QC limits. The surrogate recovery criteria were not met for sample B16WB4 MS and it appears to be double surrogated. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.
- 6. All blank spike recoveries were within EPA QC limits.
- 7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
- 8. Internal standard area and retention time criteria were met.
- 9. Manual integrations are performed according to OP 21-06A-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor

President

Lionville Laboratory Incorporated

som\gorup\data\bna\tnu-hanford-0305-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 6 pages.

_02

Lionville Laboratory Sample Discrepancy	Report (SDR) SDR#: U3MSO46
Initiator: Robert G. Cardin Date: 6/10/03 Batch: 0305C403 Samples: Client: Thu Honford F03006 Method: 60846/n/cavw//c	Matrix: Seil
1. Reason for SDR	2
a. COC Discrepancy Tech Profile Error Client Request Transcription Error Wrong Test Co	Sampler Error on C-O-C de Other
b. General Discrepancy	Je
· · · · · · · · · · · · · · · · · · ·	_ Wrong Sample Pulled Label ID's Illegible
Hold Time Exceeded Insufficient Sample	Preservation Wrong Received Past Hold
Improper Bottle Type Not Amenable to Analysis	
Note*: Verified by [Log-In] or [Prep Group] (circle)signature/date:	
c. Problem (Include all relevant specific results; attach data if neces	sary)
All surrogates cutsule ac imits	
All other somples lok	
114 014 30174 190	,
2. Known or Probable Causes(s)	
Appears sample spiked	with 1x suragate
3. Discussion and Proposed Action Other Description:	
Re-log	Munatean Report
Entire Batch	Mulaitur repa i
Following Samples: Re-leach	
Re-extract	
Re-digest	
Revise EDD Change Test Code to	
Place On/Take Off Hold (circle)	<i>f</i> •
4. Project Manager Instructionssignature/date:	0/10/03
Disagree with Proposed Action; See Instruction Include in Case Narrative	
Client Contacted:	
Date/Person	
Add Cancel	ı
	Other Explanation:
Verified re-[log][leach][extract][digest][analysis] (circle)	лиет Ехріанацоп.
✓ Included in Case Narrative	
Hard Copy COC Revised Electronic COC Revised	
EDD Corrections Completed	
When Final Action has been recorded, forward original to QA S	pecialist for distribution and filing.
Route Distribution of Completed SDR Route	Distribution of Completed SDR
X Initiator	Metals: Beegle
X Lab General Manager: M. Taylor X Project Mgr: Stone/Johnson/Haslett	Inorganic: Perrone GC/LC: Kiger
X Technical Mgr: Wessen/Daniels	MS: Rychlak/Layman
XQA (file)	Log-in: Melnic
Data Management: Feldman	Admin: Soos
Sample Prep: Beegle/Kiger	Other:
·	

GLOSSARY

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- J = Interference.
- NO = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TlCs), where the identification is based on a mass spectral library search. It is applied to all TlC results. For generic characterization of a FlC, such as chlorinated hydrocarbon, the N code is not used.
- X = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions
		and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.



Lionville Laboratory, Inc.

Client: TNUHANFORD F03-006 H2208

RFW Batch Number: 0305L403

*= Outside of EPA CLP OC limits.

Semivolatiles by GC/MS, Special List

Report Date: 06/19/03 16:27

Page: la

Work Order: 11343606001

SBLKTO SBLKTO BS B16WB4 B16WB4 Cust ID: B16WB4 03LE0580-MB1 03LE0580-MB1 002 002 MS 002 MSD RFW#: Sample SOIL SOTT SOIL SOIL SOIL Matrix: Information 1.00 1.00 1.00 1.00 1.00 D.F.: UG/KG UG/KG UG/KG UG/KG UG/KG Units: 왐 74 \$ 150 * % 옿 70 64 Nitrobenzene-d5 80 ¥ 왐 69 ş. 78 湰 153 * % 69 2-Fluorobiphenyl 77 옿 Surrogate 95 ş 100 옿 왕 103 ¥ 227 * % Terphenyl-d14 Recovery 74 ¥ 옿 70 ¥ Phenol-d5 82 કૃ 151 * % 61 Ŷ 65 옿 122 * % 58 8 ¥ 2-Fluorophenol 70 옿 66 옿 74 Ŷ. 77 69 ž 174 * % 2.4.6-Tribromophenol IJ ¥ 69 웋 62 Ŷ. 330 74 350 U Phenol IJ 330 U 330 U 350 U 350 350 U bis(2-Chloroethyl)ether 330 64 ¥ 옿 56 옿 U 350 U 65 2-Chlorophenol 330 330 IJ 350 U 350 U 350 II U 1,3-Dichlorobenzene_____ 330 67 왗 350 U 65 욹 55 ¥ U 1,4-Dichlorobenzene 350 U 350 U 330 IJ 330 U 350 U 1,2-Dichlorobenzene 330 U 350 U 330 U 350 U 350 U 2-Methylphenol ___ IJ 350 U 330 U 330 U 350 U 2,2'-oxybis(1-Chloropropane) 350 U 330 330 3- and/or 4-Methylphenol 350 U 350 U 350 U U 350 U 74 9 63 ş 330 Ħ 70 ş N-Nitroso-di-n-propylamine 330 IJ 330 IJ 350 U 350 U 350 ປັ Hexachloroethane 330 U 330 Ħ U 350 IJ 350 U 350 Nitrobenzene 330 U 350 U 350 U 350 U 330 U Isophorone 330 330 U 2-Nitrophenol____ 350 U 350 U 350 U U 330 U 330 U 350 U 350 U 350 U 2.4-Dimethylphenol 350 U 330 ŢŢ 330 IJ U 350 U bis (2-Chloroethoxy) methane_____ 350 U 330 U 350 U 350 U 350 U 330 2,4-Dichlorophenol 58 330 70 왐 350 U 73 왐 ¥ U 1,2,4-Trichlorobenzene 350 U 350 U 350 U 330 U 330 U Naphthalene _____ 330 U 330 U 350 IJ 350 U 350 U 4-Chloroaniline 350 U 330 U 330 U 350 U 350 U Hexachlorobutadiene _____ 350 U 75 % 67 ¥ 330 U 68 ¥ 4-Chloro-3-methylphenol 350 U 350 U 330 U 330 U 350 U 2-Methylnaphthalene_____ U 350 U 330 U 330 350 U Hexachlorocyclopentadiene 350 U 350 U 330 U 330 IJ 350 U 2,4,6-Trichlorophenol 350 U 840 U 860 U 860 U 860 U 840 U 2,4,5-Trichlorophenol____

Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: RFW Batch Number: 0305L403 1b Cust ID: **B16WB4** B16WB4 **B16WB4** SBLKTO SBLKTO BS 002 002 MS 002 MSD 03LE0580-MB1 03LE0580-MB1 RFW#: 2-Chloronaphthalene 350 U 350 U U 330 U 330 U 350 2-Nitroaniline_____ 860 U 860 U 860 U 840 IJ 840 IJ Dimethylphthalate_____ 350 U 350 U 350 IJ 330 IJ 330 IJ Acenaphthylene_____ Ħ 350 U 350 II 350 П 330 U 330 2,6-Dinitrotoluene____ 350 U 350 U 350 U 330 U 330 U 3-Nitroaniline_____ 840 U U 860 U 860 U 860 U 840 330 U 75 ¥ Acenaphthene_____ 350 U 78 ¥ 68 옿 2,4-Dinitrophenol 860 U 860 U 860 U 840 U 840 U 860 U 79 ž 68 ¥ 840 U 66 ¥ 4-Nitrophenol 330 U 330 U Dibenzofuran_____ 350 U 350 U 350 Ü 350 U 93 * % 82 왐 330 U 83 왐 2,4-Dinitrotoluene_____ 330 U 330 U Diethylphthalate_____ 350 U 350 U 350 U 4-Chlorophenyl-phenylether 350 U 350 U 350 U 330 U 330 U 350 U 350 U 350 U 330 U 330 U Fluorene 4-Nitroaniline 860 U 840 U 840 U 860 U 860 U 4,6-Dinitro-2-methylphenol 840 U 840 U 860 U 860 U 860 U N-Nitrosodiphenylamine (1)_____ 350 U 350 U 350 U 330 U 330 U 4-Bromophenyl-phenylether 350 U 350 U 350 U 330 U 330 U Hexachlorobenzene____ 350 330 U 330 350 U 350 U U U Pentachlorophenol 860 U 87 840 U 88 ¥ 96 ¥ ¥ Phenanthrene 350 U 350 U 350 IJ 330 U 330 U Anthracene______Carbazole_____ 350 U 350 IJ 350 U 330 IJ 330 U 350 U 350 U 350 U 330 U 330 U Di-n-butylphthalate J 19 350 U 350 II 330 U 330 U Fluoranthene_____ 350 U 350 U 350 U 330 Ü 330 U 350 U 98 왐 90 옿 330 U 97 ક Pyrene Butylbenzylphthalate 350 U 350 U 350 330 U U 330 П 3,3'-Dichlorobenzidine_____ 350 U 350 U 350 U 330 U 330 U Benzo(a)anthracene____ 350 U 350 U 350 U 330 IJ 330 U 350 U 350 U 350 U 330 U 330 U Chrysene bis(2-Ethylhexyl)phthalate____ .78 JB 82 JΒ 61 JB 34 J JB 38 Di-n-octyl phthalate_____ U 350 350 U 350 U 330 U 330 U Benzo(b) fluoranthene_____ 350 U 350 U 350 U 330 Ħ 330 U Benzo(k) fluoranthene_____ 350 U 350 330 U U U 350 Ū 330 Benzo(a)pyrene_____ 350 U 350 U 350 IJ 330 U 330 U Indeno(1,2,3-cd)pyrene_____ 350 U 350 U 350 U 330 U 330 U Dibenz(a,h)anthracene____ 350 U 350 U 350 U 330 U 330 U Benzo(q,h,i)perylene_____ 350 U 350 U 350 U 330 U U 330 2-Butoxyethanol_____ 350 U U 350 U 350 U 330 U 330 350 U 350 U 350 U 330 Ū 330 U Benzyl alcohol

*= Outside of EPA CLP QC limits.

RFW Batch Number: 0305L4			TNUHANFOR				k Order: 11	343		Page: 1c	
	Cust ID:	B16WB4	В	16WB4	B16WB4		SBLKTO		SBLKTO BS		
	RFW#:	002	2 0	02 MS	002 MSD		03LE0580-M	B 1	03LE0580-MB1		0
Tributylphosphate		350	Ū	350 U	350	Ü	330	U	330 U		
(1) - Cannot be separate	d from Dipl	nenylamine	e. *= Out	side of E	PA CLP QC	lim	its.				

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT	SAMPLE	NO.	
B16WB4			

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2208

Matrix: (soil/water) SOIL Lab Sample ID: 0305L403-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D060837

Level: (low/med) LOW Date Received: 05/14/03

% Moisture: 4 decanted: (Y/N) Date Extracted: 05/15/03

Concentrated Extract Volume: 1000(uL) Date Analyzed: 06/09/03

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) <u>N</u> pH: <u>7.0</u> CONCENTRATION UNITS:

Number TICs found: $\underline{4}$ (ug/L or ug/Kg) $\underline{UG/KG}$

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
				====
1.	UNKNOWN	3.175	100	JB
2.	ALDOL CONDENSATE	3.549	200	JAB
3.	ALDOL CONDENSATE	4.131	30000	JAB
4.	ALDOL CONDENSATE	5.296	100	JA
				li

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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	CTIENL	SAMPLE	NO.	
ı				
1	SBLKTO			

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-006 H2208

Matrix: (soil/water) <u>SOIL</u> Lab Sample ID: <u>03LE0580-MB1</u>

Sample wt/vol: 30.0 (g/mL) \underline{G} Lab File ID: $\underline{D060835}$

Level: (low/med) LOW Date Received: 05/15/03

% Moisture: ____ decanted: (Y/N) __ Date Extracted: 05/15/03

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 06/09/03

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 3 (ug/L or ug/Kg) UG/KG

			_	
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Į Q
=======================================	*======================================	======	=======================================	====
1.	UNKNOWN	3.185	70	J
2.	ALDOL CONDENSATE	3.542	100	JA
3.	ALDOL CONDENSATE	4.089	20000	JA
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Project Conta	ct/Phon	·	Δ		- h - A -	7	Volum	•	Solid	45	aso			40	-		_		120	60	196			
Lionville Labo	ratory !	Project Manage	<u> W.W.</u> 	Mary W	6-1 April		Preser	vatives	 	-			:-						_	_	-			 ,
0C 21 2	<u> </u>	Del 31)	_ TAT	samo 1	7				·L			ANIC					INOI	RG	. 1	- M	4			
Date Rec'd	5.14.	031	Date Due	6-13-0	03		ANALY REQUI		-	Ş.	8 €	Pest/	Herb	A Sol	,		Metal	S	\$ 6 1 2	20 Z	500	1		
MATRIX					Ma	ıtrix			1				1		Lionvill	e Lab	orato	ry Us	e Onl	у	1			
CODES: S - Soil SE - Sediment SO - Selid	Lab ID	Cile	ent ID/Descrip	otion	Che (c	C psen /)	Matrix	Date Collected	Time Collected	おかつ	0625X	0 P.C		3000				i	2002	243 N2	7350:		:	
SL - Sludge W - Water		0			MS	MSD	\$	 		17				2	-+						Pa	┼		
0 - Oil	∞	BILLINB				-	12	57.03			1		7	1	-					 	-	 	1	
A - Air DS - Drum	∞ ≥	BILLINE	<u> </u>			-	 }	5.803		X.	1			X		-+		,	Х	1	-	+	1	
Solids DL - Drum	<u> </u>	BIOWS	<u> </u>	 		 	<u> </u>	1 7	7		} —−	-	-	┼					^	X	X	 		
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Special Instruc	tions:	SAF +	F03-00	6			/REVISIO	NS:	ul - 00	١.	40.	Cl.							Llonvi	ile Lab	orator	y Use C	only	
	len 1	natrix ac						2 Supla 3. Hg. A 4. SOY	,-00 z	Al.	(A.	8 . As	. B.	-1. M	3. Bi.	POJ	Ha Air 70 2) 3) Co	shippe Shippe and Del rbill # _ Ambie Recent ondition	475/ nt or C	33-4 2000	1 F 7/ F 3	amper Res Preser Cackage Cackage Cackage Cackage Cackage Cackage Cackage Cackage Cackage Cackage Cackage	kein on Or or or or or or kein on	uter N Outer N ample er N
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FH-Central Platea	u Project (\(\)		HAIN OF CUST			ANAL	<u>YSIS</u>			F0	3-006-86	Page 1	of 1
Collector Johansen/Pope/Pfister			nny Contact Hulstrom	Telephon 373-39				Project C TRENT,	coordinator SJ	Price Code	8N		rnaround
Project Designation 200-PW-2/200-PW-4 OU - Bo	orehole Soil Sampling		ling Location -A-37 (C4106); (237.5'-2	:40')				SAF No. F03-006	I All Quality			30 Day	
Ice Chest No.		Field	Logbook No. F-N-3361		COA 117504ES	10			f Shipment ment Vehicle	- 			
Shipped To 1WD5/12/03 Waste Sampling & Character	3 0			030	229	· ·		Bill of L	nding/Air Bi	11 No. 587	<u> </u>	°C	
POSSIBLE SAMPLE HAZA			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool	$\neg \Lambda$					
			Type of Container	Gs*	aG	Gs*	G/	7			 	 	
Special Handling and/or S	torage		No. of Container(s)	3	1	3	*	/ _				<u> </u>	
	200300	del	Volume	40mL	250mL	40mL	199	hL.					
	SAMPLE ANALY	, /SIS		See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Socitors Special Instruct	(4) is tel ions.					
							/						
Sample No.	Matrix *	Sample Date	Sample Time										
B16WB3	SOIL	5-7-03	1050	X_	<u>×</u>	<u> </u>	<u> </u>					ļ	
<u> </u>	·										 	 	
		<u> </u>	•		<u> </u>		-	_	·			<u> </u>	
CHAIN OF POSSESSION Relinquished By/Removald-From AMX/MUDIN OMA/M		Sign/Prin	red in Da	nte/Time	** T	CIAL INSTR he laboratory is			ne and diesel ra	unge compounds fro	m WTPH-D ana	lysis.	Matrix *
Relinquished By/Remoyed From	115 5/7/03/40			17103 14		emi-VOA - 82	70A (TCI	L); Scmi-VO	A 8270A (A	entanone, Benzyl ak dd-On) (2-Butoxyet	hanol, Tributyl p		SE=Sediment SO=Solid SI=Studge
CEDENCE CITY	Date/Time			8 03 03 1	(3) A	Jeohols, Glyco	ls, & Ket	iones - 8015	(1-Butanol, Die	TPH-G; PCBs - 80 cthyl ether, Ethylene paum-152, Europha	glycol, Methan		W = Water O=Oil A=Air
	L 518/03/415) Bylonius	Ralieton	58031	45	na Spee - Add	on (Anti-	moay-125 C	esium 134, Ra	pum-132, Europius lium-226, Radium-1 ment a ICP/MS - 2 00	28, Thi-1201; 1	Totopic	DS-Drum Solids DY-Order Dipoids
Refrequished Ety/Removed From	Date Time 0 4 4 15	Received By/Sto			Arstr Uma	de, Barium, Be um) NCP Me ti	ryllium, (uts - 001 0	Cadmium, Cl	romum, Copp (Dismuth, Boro	er, zead, Merousy, l m); 10 Anions - 200	tickel, Selenium NO (Chloride, F	Silver, worlde,	try Liquid Try Liquid
Relinquished By/Removed From REF 1A 3728 51	Date/Time	Received By/Stor	Meh 5/30	ate/Time 3 /300	<u>(</u>) 300,7	(Nitrogen in a	سنمصي	n); pH (Soil	osphate, Sillfal 0045	e); Cyanide (10th)	-339.2 , Cations	-(I C) - /	X=Other
Relinquished By/Removed From S. S. GALE D. L. S.	Date/Time 1303 1300	Received By/Stor	<i>Ε</i> χ	nte/Time	ге	rsonnel not a inquish sam	ples fro	m the 372	8				
LABORATORY Received By SECTION	Mesich 51403	10935 2	Khilin 5 HO	Tit	ie Re	f# <u>/ A</u> on	ا_ن_	<u> </u>	7			ate/Time	
FINAL SAMPLE Disposal Me DISPOSITION	ethod					Dispo	sed By					Date/Time	

FH-Central Platea	u Project	CI	HAIN OF CUST	ODY/S	AMPLE	ANAL	YSIS	REQUES	ST	F	3-006-87	Page 1	of 1
Collector Johansen/Pope/Pfister		Compa	iny Contact Hulstrom	Telepho 373-3	ne No.			Project Coor TRENT, §J		Price Code	8N	Data Tu	rnarpund\
Project Designation 200-PW-2/200-PW-4 OU - Bo	orehole Soil Sampling		ing Location -A-37 (C4106); (272.5'-2	275')				SAF No. F03-006		Air Qualit	y 🗆	30]	Days 💙
Ice Chest No. ERC	02404 2-005 188527		Logbook No. F-N-3361		COA 117504ES	10		Method of St Governmen					
Shipped To TYD 5-12-0 Waste Sampling & Character	03 Pecra	Offsite - N/A	Property No. A	30 2	229			Bill of Ladin	g/Air Bill 573°-3	No. SE	B'OS	ےم	
POSSIBLE SAMPLE HAZA	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool	/]					
Special Handling and/or S	torage		Type of Container No. of Container(s)	Gs* 1100 4-34-83 7 3	aG I	Gs' 2004-34 -44 2/3	GA	1					
			Volume	40mL	-40mL 250mL	40mL	170 170	њ С					
	SAMPLE ANAL	YSIS		See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Se in an	. .					
Sample No.	Matrix *	Sample Date	Sample Time			ka sa sa sa sa sa sa sa sa sa sa sa sa sa			4				
B16WB4	SOIL	5/8/03	1025	X	X	X	X						
		•					-	- · · ·					<u> </u>
CHAIN OF POSSESSION		Sign/Print	Names	<u> </u>	SPEC	LAL INSTE	RUCTIO	NS			<u>. </u>	<u> </u>	Matrix *
Relinquished By/Removed From J-5. FS/E J J J J J J J J J J J J J J J J J J J	Date/Time S/8/03 1 Date/Time S/8/03/3	Received By/Stor		te/Time	(1) V (2) S 1200 TPH-	ne laboratory is 'OA - 8260A (' emi-VOA - 82 Diesel Range -	to report TCL); VC 70A (TCL WTPH-E	both kerosene ar 0A - 8260A (Add -); Semi-VOA 0; TPH-Gasoline	-On) (2-Pen 8270A (Add Range - WT	ge compounds from tanone, Benzyl ald I-On) {2-Butoxyet PH-G; PCBs - 80	cohol, n-Butylbe hanol, Tributyl p 82	nzene)	S=Soil SE=Sodiment SO=Solid SI=Shadge W = Water O=Oil
many by many		HE SALENIO		1031	H2 (4) C	iamma Spectro na Spec - Add	on (Antir	nony-125 Cesion	t-60, Europi -134, Rodi	thylene glycol, Me um-152, Europius an-226, Radium-	7-154, Europium 28, Tin-126); Id	etepic \	Ayun Dip Dipin Solids Dip Draw Liquids
Relinquished By/Removed From Relinquished By/Removed From	Date/Time Date/Time	Redstred By/Stor	 	ate/Time 8/03 L ate/Time	15 Arser	<u>ic, Barium, Be</u> A.(Add on) (B	ryllium C ismuth, D	hromium, Coppe oron); IC Anions	r; Lead, Me -300.0 (Ct	reary, Nickel, Silv duride, Phoride, 1 tions (IC) - 300:7	er, Uranium), 10 Vitrogen in Nitro	CP Metals* te: Nitrogen	L-Liquid V-Vegetation
Refinguished By/Removed From	38 (300). Date/Time	Received By/Stor	1156 5130			(di) - 9 045 Po	ersonnel	not available	to	()	(1. 222 PP-1 22 PP-	. (X=Other
LABORATORY Received By SECTION	1303 1300 Hew Ex	5 4 63 CT35	Dynan	5.14.03ii	16735	R	ef# <u>16</u>	on <u>5 / 1</u>	2 / <u>83</u>	-	Đ	Pate/Time	<u> </u>
FINAL SAMPLE Disposal Me DISPOSITION	thod					Dispo	sed By		·		<u>.</u> [Date/Time	

FH-Central Plat	eau Project	CI	HAIN OF CUST	ODY/S	SAMPI	LE ANAL	YSIS	REQUEST		F03	-006-72	Page 1	of L
Collector Johansen/Pope/Pfister	<u> </u>	Comp	any Contact Hulstrom	Telepho 373-3	ne No.			Project Coordina TRENT, SJ	itor	Price Code	8N		Barouad
Project Designation 200-PW-2/200-PW-4 OU	- Borehole Soil Sampling		ling Location -A-37 (C4106); (272.5'-2	275')				SAF No. F03-006		Air Quality		45 I	Days
Ice Chest No. ERC	02 404		Logbook No. F-N-3361		COA 117504	JES10		Method of Shipm Federal Express					
Shipped To -EDERLINE SERVICES (Formerly TMA) 4/22	Offsite	e Property No.	30	22	9		Bill of Lading/A	ir Bill N	10. SEE	057	> <u></u>	
POSSIBLE SAMPLE HA	ZARDS/REMARKS			Cool 4C	Cool 4	C Cool 4C	Nos	se None					
			Preservation				<u> </u>	/		·		<u> </u>	
Special Handling and/o	r Storage		Type of Container	aG	aG	aG	20) a0				<u> </u>	
Special Izanding and	. 5.01		No. of Container(s)	3	ı	1	1	1				<u> </u>	
			Volume	120mL	60mL	_ 120mL	60n	nL 60mL			·		
			<u> </u>	Chromium Hex - 7196	NO2/NO 353.2		See item Spec	iai /	·				
	SAMPLE ANALY	SIS					instruc	tiope.					
							1 N	1/24/		Tieto:	}		
Sample No.	Matrix *	Sample Date	Sample Time	1 7 7 7	- Name of the					1100			
B16W89	SOIL	5/8/0		1	メ	1	7		······································	BIGWO	5		
													
				<u> </u>			ļ						
					1		<u> </u>	264	<i>صارا</i> ء	<u> </u>			136-0-1
CHAIN OF POSSES: Relinquished By/Removed From	Til Date/Time	Sign/Prin	rediln ERL D	ate/Time	*	*- The leboratory i	s to achit	ONS A Sac-		g for Carbon-14.	** The labora	atory is to	Matrix *
timponuncian Himmur	BL5803 190		- R Nielson 5-		17.5	•		sel range compounds i					SE=Sediment SO=Solid
Relinquished By/Removed From	ivelson 5/8/08/415	1 1-1/1- 4-1	7A 5728 518	ate/Time	115 1	i) Teclmetium -99; 12 9; Niekel-63, Ne	; Strontiu pturuum-	m-89,90 - Total Sr. 19 237 - 48/4	sotopic Th 4/2	rorium (Thorium 2 2 7/0 }	!32}; Carbon	- 14; Iod ine-	Si=Sludge W = Water O=Oil
Relinquished By/Removed From	Date/Time 51303 1300	Received By/Sto	ared In , a , D	ate/Time	1300			47		/ /			A=Air DS=Drum Solids
Relinguished By/Removed From	Date/Time	Received By/Sto		Date/Time	1000								DL=Dram Liquids T=Tissue WI=Wipe
Salfari Stale		FED	EX	Date/Time		Personnel relinquish	samole	s from the 3728					L=Liquid V=Vegetation X=Other
Relinquished By/Removed From	5:14:03 C935	Received By/Str	15. H) 5:41.0	3 <i>CR3</i>		Ref# <u> </u>	on <u>.</u>	5 113 103					X=Other
Relinquished By/Removed From	Date/Time	Received By/Si	ored In C	Date/Time	İ								
LABORATORY Received	ed By	<u></u>		•	Title							Date/Time	
FINAL SAMPLE Dispose DISPOSITION	at Method					Disp	osed By					Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

IENT: TNU Hondard

chase Order/Project:

DATE: 5.14.03

F# //SOW# / Release #: F03-006

poratory SDG #:

03051403

TE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION										
1.	Custody seals on coolers or shipping container intact, signed and dated?	NY es	. □ No .	D N/A	D see Comment					
2.	Outside of coolers or shipping containers are free from damage?	☐ Yes	□ N ₀	DNA	see Comment i					
3.	Airbill # recorded?	DeYes :	□ No	D N/A	See Comment					
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	X Yes	□ No	DNA	See Comment					
5.	Sample containers are intact?	Byres	□ No	□ N/A	D see Comment					
5.	Custody seals on sample containers intact, signed and dated?	DAYes	□ No.	□ N/A	See Comment					
1.	All samples on coc received?	Yes	□ No	DNA	- D see Commen					
3.	All sample label information matches coc?	Yes	□ No	D N/A·	D see Commen					
	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	□Yes	□ No	DNA	□ see Commen					
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	Yes	□ No	D N/A	□ see Commen					
11.	Where applicable, bar code labels are affixed to coc?	D Yes	□ No	AME	□ see Commer					
12.	coc signed and dated?	Yes Yes	□ No	□ N/A	D see Comme					
3.	coc will be faxed or emailed to client?	E Yes	D No	□ N/A	See Comme					
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	r Yes	, □ No	ES N/A	🗆 see Comme					

Cooler # / temp (°C) and Comments:

ERC 02 -404 / 1.2"

Laboratory Sample Custodian:

Laboratory Project Manager:

D. Mines

Lionville Laboratory, Inc. DRO ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4	002	s	03LE0583	05/08/03	05/15/03	05/19/03
LAB QC:						
BLK	MB1	s	03LE0583	N/A	05/15/03	05/20/03
BLK	MB1 BS	S	03LE0583	N/A	05/15/03	05/20/03







Analytical Report

Client: TNU-HANFORD F03-006

W.O. #: 11343-606-001-9999-00

LVL#: 0305L403

Date Received: 05-14-03

SDG/SAF #: H2208/F03-006

DIESEL RANGE ORGANICS

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were extracted on 05-15-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-19,20-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8015B. The analysis met the intent of method WTPH-D.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. All required holding times for extraction and analysis have been met.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. The blank spike recovery was within acceptance criteria.
- 6. The matrix QC was performed on a sample that was cancelled after the extraction and analysis had been completed. All matrix spike recoveries were within acceptance criteria. Copies of the Sample Discrepancy Report (SDR) and the form 3 have been enclosed.
- 7. All initial calibrations associated with this data set were within acceptance criteria.
- 8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Lain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

pef\r:\group\data\dro\tnu hanford\05L-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the

analytical data. Therefore, this report should only be reproduced in its entirety of 12

Lionville Laboratory Sample Discrepancy Report (SDR) SDR #: 0364144 Batch: 03054403 Parameter: 000 Initiator: John Leck. 5/24/03 Date: Samples: ms ms b, eso Matrix: 50.1 Method: sw846/MCAWW/CLP/ Prep Batch: 03 LE 5 83 Client: TNU 1. Reason for SDR __ Sampler Error on C-O-C a. COC Discrepancy __ Tech Profile Error __ Client Request __ Other ____ Transcription Error ___ Wrong Test Code b. General Discrepancy __ Container Broken __ Wrong Sample Pulled __ Preservation Wrong __ Label ID's Illegible Missing Sample/Extract __ Hold Time Exceeded __ Preservation Wrong Received Past Hold __ Improper Bottle Type Not Amenable to Analysis Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: __ c. Problem (Include all relevant specific results; attach data if necessary) The matrix ac was performed on the sample that was characted. 2. Known or Probable Causes(s) 3. Discussion and Proposed Action Other Description: __ Re-log __ Entire Batch The Sample was cardlet. after. or batch was extracted a run. He QL Following Samples: _____ Frelude Form 3/in data pkg. Re-leach __ Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle) 4. Project Manager Instructions...signature/date: # Huttle Jahron 3/2/103 √ Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative **Client Contacted:** Date/Person Add Cancel Other Explanation: 5. Final Action...signature/date: ___ ___ Yerified re-[log][leach][extract][digest][analysis] (circle) __Included in Case Narrative __ Hard Copy COC Revised __ Electronic COC Revised EDD Corrections Completed When Final Action has been recorded, forward original to QA Specialist for distribution and filing. $^{-1}$ Route Distribution of Completed SDR Route Distribution of Completed SDR X Initiator X Lab General Manager: M. Taylor Metals: Beegle __ Inorganic: Perrone GC/LC: Kiger X Project Mgr: Stone/Johnson/Haslett

__ MS: Rychlak/Layman

__ Log-in: Melnic

_ Admin: Soos

Other:

X QA (file)

X Technical Mgr: Wesson/Daniels

__ Data Management: Feldman __ Sample Prep: Beegle/Kiger

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

11343-606.001-5551-00

Lab Name: Lionville Labs, Inc.

Contract: 1343-06-01 /16/11-

Case No.: TNUHANFORD F03-006 H2208

RFW Lot No.: 0305L403-001

MATRIX Spike - Sample No.: <u>B16WB3</u>

Level: (low/med) LOW

COMPOUND (mg/Kg) (mg/Kg) REC # R		SPIKE	SAMPLE	MS	MS	QC
	1	ADDED	CONCENTRATION	CONCENTRATION	*	LIMITS
	COMPOUND	(mg/Kg)	(mg/Kg)	(mg/Kg)	REC #	REC
Injecel Pange Organics 60 0 0 45 1 75 30	Diesel Range Organics	60.0			75	 30 -130

	SPIKE	MSD	MSD		
	ADDED	CONCENTRATION	ક	8	QC LIMITS
COMPOUND	(mg/Kg)	(mg/Kg)	REC #	‡ RPD #	RPD REC
Diesel Range Organics	60.0	49.8	83	10	99 30 -130
·	l	<u> </u>		_	

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

COMMENTS:

Merphy

FORM III VOA-2

5/88 Rev.

^{*} Values outside of QC limits



GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- **MSD** = Indicates matrix spike duplicate.
- **DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- **DF** = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.



GLOSSARY OF DIESEL RANGE ORGANICS DATA

- **D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

RFW Batch Number: 0305L403 Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1

Cust ID: B16WB4 BLK BS

	Cust ID:	B16WB4	Ŀ	BLK		BLK BS	
Sample	RFW#:	002	2	03LE0583-M	в1	03LE0583-M	B1
Information	Matrix:	SOIL		SOIL		SOIL	
	D.F.: Units:	1.(mg/I		1.0 mg/K		1.0 mg/K	
	p-Terphenyl	95	%	109	ક	92	*
=======================================	======================================		==f1		= f l	==========	=fl=========fl========fl===========
Diesel Range Organic	S	12.5	U	12.0	U	74	*
Kerosene		12.5	IJ	12.0	IJ	12.0	IJ

phy of 10

Report Date: 06/21/03 14:58

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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<u>030s</u>	LHC	FIELD PERSO)NNEI	L: C(OMPLE ———	TE ONL	Y SHAD	<u>A-C</u>	HEA	S 		E-G	 ,				<u>H</u>	T	Z	ONVILLE LA	BORATO	AY INC.
Client	Mu-	Hamford F03-006			Refrige	rator #			2			2					2	2	7		<u> </u>	<u> </u>
Est. Final Pro	j. Samp	ing Date	-		#/Type	Container	Liquid Solid	კ ვ.	lc _o			<u></u>			 		las	la	\G.		-	
7	Structions: SAF & FO3-00 6 Received Received Received Relinques						Liquid		1			ď	, ,				1,19	-30	1			
Project Conta	FIELD PER TNU-Handard F03-006 Proj. Sampling Date (1343-606-00-1999-00 ontact/Prione # Laboratory Project Manager Quiltture PEC Del StD TAT 3000-00 d S.14-03 Date Due 6-13-0 ent ID Client ID/Description SAF 4-F03-00-6			2	Volume	•	Solid	40	aso			40					130	60	126			
	oratory (C	ridject Manager COCO To To To To To To To To To To To To To	1001		Preser	vatives	†	<u> </u>	-			-,					_	_				
					ANALY		-	δ. O.		Pest PCB BCB	Herb	Alcohole Gyester			Metal Z	ORG Z	\$ E	762/ 802/	C.1.+			
			Mat	rix							‡			ile La	borat				1			
MATRIX CODES: S - Soli SE - Sediment SO - Selid		Client ID/Description	Chor Chor	C ten ')	Matrix	Date Collected	Time Collected	おかつ	X 57.90	0948 0948		GCSC					1 CR6	INS N.	TOGGA		i	
SL - Sludge W - Water		2	MS	MSD	\$		 -	1.7		-50		9			-	 - -	 	-	<u> </u>		<u> </u>	╁
O - Oil A - Air					ي ج	57.63			 	9 - 10				[{	- -	 -	 	 	1-	┼
DS - Drum					 	5.803		X.			7.7	X			<u> </u>	 	 _	 	_		<u> </u>	┢
Solids DL - Brum Liquids L - EP/TCLP	<u></u>	B16W89			1	1 7	7	-	-								X	X	X			
Leachate								T													-	
WI-Wipe X-Other																	Γ				T T	T
F - Fish																						$oxed{\Box}$
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	<u> </u>		<u>L</u>				<u> </u>	<u> </u>	<u> </u>	<u> </u>		<u>L.</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u></u> _	<u> </u>	
Special Instruc		-•		S-1	REVISIO	٥.	<u>ul - 00</u>	1	por	· C/M	at				- S	amples				mper Res		eal war
l	Ren 1	latrix ac				2. Supl	1: Ph.	<u>A1.</u> Sb. S	$\frac{A_{9}}{2}$. A.	0, i	Ba. j.	. B.	CTT	1 ^	undin #			Pa 2)	Presen ackage Unbrok	Op or kein on	r N Oute
						4. <u>Sôy</u>	-		•						$-\begin{vmatrix} \frac{1}{2} \\ 3 \end{vmatrix}$	(<mark>역공</mark> 文) Ambie) Recei	ent or (C	Good		ackage Presen		ample
·						6			 _ -						4	Condition Samp Toperty	oles Preser	ved	S	Unbrok ample OC Rec	A) or	N
Relinquishe	ed (. I Date I time i l		30			OF		NAL	me	Sar	crepand nples Li C Reco TES:	abels a	nd _		i) Flecei lolding	ived Wi Times		U C	pon Sar (ooler	mole R	Rec't or N
Yeur	— lox	1.41 man (3.14.03 0/23)					-RE	AK.	11 11	N.	"	, Eð;					0	or N	T	emp	10	_ °C

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FH-Central Platea Collector	u Project (A)	Comp	HAIN OF CUST any Contact	Telephon	e No.	ANAL)	YSIS	Project Co	ordinator	+	03-006-86 ON	Page 1	rnaround
Johansen/Pope/Pfister		LC	Hulstrom	373-39	28		i	TRENT, SI		Price Code	SIN		
Project Designation 200-PW-2/200-PW-4 OU - Bo			ling Location -A-37 (C4106); (237.5'-2	40')				SAF No. F03-006		Air Quali	ty 🗆	30 /	Days
Ice Chest No. ERC	02 904 49-005 0/55	i305 Field	Logbook No. F-N-3361		COA 117504ES	10		Method of Governm	Shipment ent Vehicle				_
Shipped To 1WD 5/12/03 Waste Sampling & Character	zarion Recra	Offsite N/A	e Property No.	30	229	1		Bill of Lad	ling/Air Bil جودہ کی	INO. SE	= 0s/	PC	_
POSSIBLE SAMPLE HAZAI	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Coal	1					
Special Handling and/or St	torace	•	Type of Container	Gs*	aG	Gs*	G/I	7					
- Special Manufalling androl St	ur age		No. of Container(s)	3	1	3	•						
	200301	del	Volume	40mL	250mL	40mL	100	AL					
	SAMPLE ANALY	rsis .		See item (1) in Special Instructions	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Socitors Process	(4) in al ions.					
Sample No.	Matrix *	Sample Date	Sample Time							اد در در این این این این این این این این این این			
B16WB3	SOIL	5-7-03	1050	X	<u> </u>	<u> </u>	7					ļ	ļ ·
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		•										 	
CHAIN OF POSSESSION		Sign/Prin	7-2-7-5			IAL INSTR			1 diaa.1 a	4.6	עלדען ד		Matrix *
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	16 5/7/03/40	S S S S	15 A 5	103 14	102 (0 v	•	-			nge compounds fro ntanone, Benzyl al		•	S-Soil SE-Sotiment SO-Solid
Reformation Ry/Removed Fam) Date/Fine 5/8/03 (300)	- TITULY IN	DANNEY CHE	SINGI	(2) S TPH-	Diesel Range -	WTPH-E); TPH-Gasolii	e Range - W	d-On) (2-Butoxye TPH-G; PCBs - 80)82		SI-Sludge W = Water O-Oil
	518103 H15	Replied By/Mor	Ralieton Dai	5 <u>8</u> 03	445 (4) C	emme Spectroi	oopy (G	osium 137, Čd nony-125, Ces	mit-60, Europ	thyl ether, Ethylen xum-152, Europtu ium-226, Radium	m -154, Europius 228, Tin-1267, 1	n=[22];	A*Air DS-Drum Solids
Reproprieted By/Removyd From	Date Time	Received By/Stor	red In	a/Tima	Auscu	ic, Barium, Bei	yllium, C	admium, Chro	mum, Coppe	rents ICP/MS - 20 I, Lend, Moreony, II); IC Anions - 20	Nickel, Selecius	Silver /	hital Wi-Wips Tolloph Veginamo
Relinquished By/Removed From REF 1A 3728 51	Date/Time 303 /300	Received By/Stor		le/Time	[•]) 300.7	(Nitrogen in #	سنممس); eH (Seil) -	phate, Sulfate 2045); Cyanide (Total)	- 333.2, Cation	s (I C) -	X=Other
Relinguished By/Removed From	1303 1300	Received By/Stor	厂 入	te/Time	rei	rsonnel not a inquish samp	ples froi	m the 3728					
LABORATORY Received By	HEDCK 51403	10735 2	X/miles 5.4443	/ °73> Tid	e Re	f# [A on	<u>ا ن</u>	12/03			1	Date/Time	
SECTION													

FH-Central Platea	u Project	С	HAIN OF CUST	ODY/S	AMPLE	ANAL	YSIS	REC	QUEST		F0:	3-006-87	Page 1	of 1
Collector Johansen/Pope/Pfister		Com	pany Contact Hulstrom	Telepho 373-3	ne No.			Proje	et Coordina VT, SJ	tor	Price Code	8N		rnaround
Project Designation 200-PW-2/200-PW-4 OU - Bo	orehole Soil Sampling		pling Location 6-A-37 (C4106); (272.5'-2	75')				SAF			Air Quality		30 J	Days
	02404 -005 MARIN	Field HR	Logbook No. NF-N-3361		COA 117504ES	10			od of Shipm vernment Ve					
Shipped To TYO 5-12-1 Waste Sampling & Character	03 Recra	Offsi	te Property No. Ac	30 2	229			Bill o	of Lading/A	ir Bill N	10. SET	s'os	ے ح	
POSSIBLE SAMPLE HAZA			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4	c						
Special Handling and/or S	torage		Type of Container	Gs* (100 4-44-45	aG	Gs*	G/R	d						
	•		No. of Container(s)	₹3 40mL	1 25430-49 -40ml-	73 40mL	170 A	ا د ط				ļ		
		<u>-</u>	Volume	See item (1) is	250mL	See item (3) in	5/20	L						
·	SAMPLE ANAL	YSIS	•	Special Instructions.	Special Instructions.	Special Instructions.	2 fecia Fruction	4 I						
Sample No.	Matrix *	Sample Date	: Sample Time						A design	3.000				
B16WB4	SOIL	5/8/03	1025	Х	X	X	メ							
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		***************************************	•					_				<u></u>		
	,													
CHAIN OF POSSESSIO Relinquished By/Removed From J-S. Sole January Relinduished By/Removed From	Date/Time S/8/8 3 17	Received By/Sa	58 58	te/Time OS SK 03	70 (1) V (2) S 1701 TPH-	'OA - 8260A (emi-VOA - 82 Diesel Range -	to report TCL); VO 70A (TCL WTPH-D	both ke A - 826 J; Semi D; TPH-	60A (Add-On) i-VOA — 8270 Gasoline Rang	{2-Penta A (Add-(e - WTP)	compounds from none, Benzyl alco On) (2-Butoxyeth H-G; PCBs - 808	ohol, n-Butylbe anol, Tributyl p 2	nzene)	Matrix * S-Soil SE-Sodiment SO-Soild SI-Sludge W = Water O-Oil
Individed of Status	Date/Time	Received By/St		8 03	145	inmma Spectro na Spec - Add	scopy (Cr	esium-l nony-li	37, Cobalt-60 25, Cesium-13	Zuropiu , Padrus	ylene glycol, Met 2-152, Europium 2-226, Radium-22	-154, Europium 8, Tm-126); L	setepic \	Angli Dis-Dising Solids Dis-Drum Liquids
Relinduished By/Rethoved From		Receipt and			115 ATT	<u>ic, Berium, Br</u> A.(Add on) (B	cyllium, C Ismuth, B e	thromiu oron); <u>l</u>	u n, Copper, Le I C Agions - 30	ed, Merc 9.0 (Clat e	us ICP/MS - 200; ury, Nickel, Silve side, Pluoride, N ons (IC) - 300;7	r , Uranium), N i u ogen in Nitra	CP Metals ue, Nhrogen	Vi-Wigo 2 L-Liquid V-Vegetation
	Date/Time 38 (300)		WhoL 5130	ste/l'ime 3		(idi) = 9 045			vailable to	3.2; Cas	ons (IC) - 300.7	(Mitrogen man	. (X=Other
Relinquished By/Removed From ONLE MICH S LABORATORY Received By SECTION	1303 1300 Hew Ex			•	Be735	ге	linquish	samp	les from the	3728 / <u>d 7</u>		1	Date/Time	
FINAL SAMPLE Disposal Management of the Disposal	ethod	,				Dispo	osed By						Date/Time	-

FH-Central Pla	teau Project	Cl	HAIN OF CUST	ODY/S	AMPLE	ANAL	YSIS	REQUEST		F03-	-006-72	Page 1	of 1
Collector Johansen/Pope/Pfister			iny Contact Hulstrom	Telepho 373-3				Project Coordina TRENT, SJ	tor P	rice Code	8N	Data Tui	
Project Designation 200-PW-2/200-PW-4 OU	- Borehole Soil Sampling	Sampl 216	ing Location -A-37 (C4106); (272.5'-2	75')				SAF No. F03-006	A	ir Quality		45 l 	Days
Ice Chest No. ELC			Logbook No. F-N-3361		COA 117504ES	10		Method of Shipm Federal Express			·		
Shipped To RE -EDERLINE SERVICES	(Formerly TMA) 4/2:	Offsite	Property No. AC	30	229	· 		Bill of Lading/Ai	r Bill No	588	057	<u>-</u>	
POSSIBLE SAMPLE HA	AZARDS/REMARKS	,	Preservation Type of Container	Cool 4C aG	Cool 4C aG	Cool 4C aG	Non aC						
Special Handling and	or Storage		No. of Container(s) Volume	l 120mL) 60mL	l l20mL	60m						
	SAMPLE ANAL	YSIS		Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Gresse - 413.1	See item Speci Instruct	<u>ا / آنت</u>		TieTo:			
Sample No.	Matrix *	Sample Date	Sample Time								n e kiji pe e La <u>ndana</u> n i		***
B16W89	SOIL	5/8/0	1 1025	1/	*	X	/			BILLINDS	5		
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						-	<u> </u>					-	
							1					 	
CHAIN OF POSSES	SSION	Sign/Prin	t Names	<u> </u>	SPEC	IAL INST	RUCTIO	ONS 984	7/22	103			Matrix *
Relinquished By/Removed From Relinquished By/Removed From	156 58 03 196	A Duren	-R Nielson 51	te/Time 1-03 1-03 1-03	(14.5) repor	t both kerosen	e and dies Strontium	we a detection limit of sel range compounds from 89,90 - Total Sr; 130	om WTPH Topic Thor	-D analysis. ium {Thorium-2		•	S=Soil SE=Sediment SO=Solid SI=Sludge W = Water
Relinquished By/Removed From TOF 14 3728 Relinquished By/Removed From	51303 1300	Received By/Sto	Del 5	ate/Time				49	7-	7°)			O=Oit A=Air D\$=Drum Solids DL=Drum Liquids T=Tissue
Relinquished By/Removed From	51303 1300	Received Bly/Ste	ΕX	ite/Time		Personnel relinquish Ref#	sample	ilable to s from the 3728 5 /13 /03					WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From		Received By/S/c		ate/Time									
LABORATORY Received SECTION	red By			Ţ	itle						· <u></u>	Date/Time	<u> </u>
FINAL SAMPLE Dispos DISPOSITION	sal Method		·			Disp	osed By					Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

LIENT: TNU Handard

urchase Order/Project:

DATE:

5.H.03

AF#/)SOW# / Release #:

F03-006

,aboratory SDG #:

03051403

TE:	ALL ENTRIES MARKED "NO" MUST BE	\ -		ENT SECTION	
1.	Custody seals on coolers or shipping container intact, signed and dated?	XYes	. 🗆 No	□ N/A	See Comment #
2.	Outside of coolers or shipping containers are free from damage?	∏Yes .	□ No	D N/A	see Comment #
3.	Airbill # recorded?	Yes :	DNo	D N/A	D see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	K) Yes	□ No	D N/A	□ see Comment #
5.	Sample containers are intact?	Syres	DNo	D N/A	□ see Comment i
6.	Custody seals on sample containers intact, signed and dated?	ENYes	D No	□ N/A	D see Comment
7.	All samples on coc received?	Yes	□ No	AWG	☐ see Comment
8.	All sample label information matches coc?	K) Yes	□ No	□ N/A·	see Comment
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	□ Yes	□ No	DNIA	See Comment
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	Ny Yes	□ No	DNA	D see Comment
11.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	AIMED	D see Commen
12.	coc signed and dated?	Yes Yes	□ N ₀	DNA	D see Commen
13.	coc will be faxed or emailed to client?	E Yes-	D No	DNA	D see Commer
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	r □Yes	D No	M N/A	🛘 see Commer

Cooler # / temp (°C) and Comments;

ERC 02 -404 / 1.2"

Laboratory Sample Custodian:

Laboratory Project Manager:

Daner Q

Lionville Laboratory, Inc. GRO ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03

LVL LOT # :0305L403

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
						
B16WB4	002	s	03LVK521	05/08/03	N/A	05/21/03
B16WB4	002 MS	S	03LVK521	05/08/03	N/A	05/21/03
B16WB4	002 MSD	S	03LVK521	05/08/03	N/A	05/21/03
LAB QC:						
TBLKKD	MB1	s	03LVK521	N/A	N/A	05/21/03
TBLKKD	MB1 BS	S	03LVK521	N/A	N/A	05/22/03

Michale





Analytical Report

Client: TNU HANFORD F03-006

LVL#: 0305L403

SDG/SAF#: H2208/F03-006

W.O. #: 11343-606-001-9999-00

Date Received: 05-14-03

GRO

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were analyzed according to Lionville Laboratory OPs based on SW-846 method 8015 for Gasoline range organics (GRO) on 05-21,22-03. The analysis met the intent of method WTPH-G.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LVLI's sample acceptance policy.
- 2. All required holding times for analysis have been met.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. The blank spike recovery was within acceptance criteria.
- 6. All matrix spike recoveries were within acceptance criteria.
- 7. All initial calibrations associated with this data set were within acceptance criteria.
- 8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

pef\Rrgroup\data\gro\tnu\\05L-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.



GLOSSARY OF GASOLINE RANGE ORGANICS DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- **DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- **DF** = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.



GLOSSARY OF GASOLINE RANGE ORGANICS DATA

- **D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC/MS.

R:/SHARE/GCVOLATILE/GCVOLATILEGLOS.DOC

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 06/21/03 13:42

	Cust ID:	B16WB4	B16WB4	B16WB4	TBLKKD	TBLKKD BS
Sample	RFW#:	002	002 MS	002 MSD	03LVK521-MB1	03LVK521-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
	Fluorobenzene	88 %	83 %	80 %	97 %	101 %
:== ==		=====fl==	=====fl==	=====f]	.======f1	======================================
Jasoline Range (Organics (GRO)	29 U	98 %	93 %	30 U	103 %

populas

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

<u> 230s</u>		Headard Fo3-006	SONNE	L: C	OMPLE		Y SHAD	A-C	ABAR D	s 	•	E-G					H 2	T	7	ONVILLE	HORATO	EVINC
. Final Pre	j. Samp	ling Bate			#/Type	Container	Liquid Solid	3				-										_
oject # Sject Conte	et/Phor	3%3=606-09F1999-00			Volume		Eiguid	300	lG ₀		100	პი _მ	Ę				امم	lc.	\Ge			
nville Lab	oratory	Project Manager QX 04 Ht 40 Bel 540 TAT 30 8cm 1	har	<u>ک</u>	Preser	•	Solid	40	<i>8</i> Sb			40			343 A		190	<u>60</u>	196			-
		03 Date Due 6-13-0)	 - _	ANALY REQUE		-	٠ ٥ ٥	ORG	ANIC PCB CB	Herb	A Technic	•		Metal	RG S	1 to 1	762/ Z 63/	+ 300		And the second second second	
TRIX				trix IC						·	1		lonv	ille La	borate	ory Us	se Only		1			<u></u>
DES: Soil - Sediment - Soild	Lab ID	Client iD/Description	Cho (e	MSD	Matrix	Date Collected	Time Collected	Dert H	2520 0860	0 9 CB	-	0GGC					1CR6	2 M3 M2	TOGGA		:	
Sludge Water Oil	8	BIGWB3			\$	57.63	1050	X	X		-47	X										
Air Drum	∞ <i>≥</i>	B16W84		_	1	5.803	1035	X	X			X									1	-
Solids Drum Uguids	<u>003</u>	B16W89			1	7	7	-					<u> </u>				X	X	X			ļ
EP/TCLP Leachate	-							-						<u></u>		-	-				100	-
Wipe Other Fish																					1	
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cial Instruc	tions:	SAF # F03-006			/REVISIO	NS:							_		<u> </u>	<u> </u>	Lionvi	lle Lab	oratory	Use O	nly	<u> </u>
	•	latrix ac				1	•	AJ.	$\frac{A_9}{e/2}$. As	0, l	1, 100	. 3.	; cl. (- 7 ⁴ - 2) - 3) - 4)	Ambie Ambie Andition Samp	475/ ent or 6 ved in 6 n 6 o	334 1990 1990 1990 1990 1990 1990 1990 199	1) Pa 2) Pa 3)	Present ackage Unbrok ackage (Present Unbrok ample	t on Out or or on or or st on Se on on	uter N Outer N ample or N

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FH-Central Plateau Project Collector			CHAIN OF CUSTODY/SAMPLE ANALYSIS										of 1
Johansen/Pope/Pfister			Company Contact Telephone No. LC Hulstrom 373-3928						ject Coordinator ENT, SJ	Price Code			
Project Designation 200-PW-2/200-PW-4 QU - Borchole Soil Sampling			Sampling Location 216-A-37 (C4106); (237.5'-240')						SAF No. Air Quality			□ 30 Days	
Ice Chest No. ERC		Field Logbook No. COA HNF-N-3361 117504ES10					Method of Shipment Government Vehicle						
Shipped To 1WD 5/12/03 Waste Sampling & Character	Offs - N	ite Property No.	229	9 Bill of Lading/Air Bi			IINO SEE OSPC						
Waste Sampling & Characterization Keca POSSIBLE SAMPLE HAZARDS/REMARKS			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool	4C					
Special Handling and/or St	torage	•	Type of Container	Gs*	#G	Gs*	G/	4					
· ·			No. of Container(s)	3	1	3	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<u> </u>				<u> </u>	
<u>.</u>	20030	Wel	Volume	40mL	250mL	40mL	\$	hL					
	CARDIE ANAL	VOIC	•	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Section	(4) in iei ioes.					
	SAMPLE ANAL	1515											
Sample No.	Matrix *	Sample Date					121 6. 1. 674						
B16WB3	SOIL	5-7-0	3 1050	<u> </u>	<u> </u>		Y					ļ	·
<u> </u>		-		·								<u> </u>	
		-								-			
CHAIN OF POSSESSIO	N	· · ·	i-t Names		lene	OLA I Diomo		2210					Matrix *
Relinquished By/Removald-from AVV		Received By/S		ate/Time	μ <u>ν</u> ξ "1	-	to repor	t both	kerosene and diesel ra	-		-	S-Soil SE-Sodiment
Relibquished By/Remoyed Form	Date/Fime			81103		Semi-VOA - 827	70A (TC	L), Sc	8260A (Add-On) {2-Pt mi-VOA 8270A (Ac H-Gasoline Range - W	id-On) (2-Butoxye	thanol, Tributyl		SO-Solid SI-Slucige W = Water
				5803	KHS (4)	Gomma Spectron	reopy (C	esiur mony	- 8015 (1-Butanol, Die 1-137, Cobatt-50, Euro 125, Cesium-134, Rac	pium-152, Europiu lium-226, Radium	m-154, Europiu 228: Tire12 01:	m-155); \	O-Oil A-Air DS-Drum Solids
Retinquished Fly/Removed From	Date Time	Received By/S	pred By/Stored in A Date/Time										
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time Nitrogen in Nitrate, N										Y-Vegitation X-Other			
Relinguished By/Removed From	Date/Time 1303 1300	Received By/S		ate/Time	re	ersonnel not a linquish sam	ples fro	om th	e 3728				
	MEDER SIVE			3 / °93) Ti	tie R	ef# [A on	<u>0</u>	1	<u></u>			Date/Time	,
FINAL SAMPLE Disposal Me DISPOSITION	sthod					Dispo	sed By		· · · · · · · · · · · · · · · · · · ·			Date/Time	

FH-Central	Plateau Project	CI	HAIN OF CUST	ODY/S	AMPLE	ANAL	YSIS	REQ	UEST		F03	3-006-87	Page 1	of 1
Collector Johansen/Pope/Pfiste	r ·	Comp	Company Contact Telephone No. LC Hulstrom 373-3928						Coordinator	Pri	Price Code 8N		Data Tur	naround
Project Designation	OU - Borehole Soil Sampling	Sampl	Sampling Location 216-A-37 (C4106); (272.5'-275')						SAF No. F03-006 Air Quality				30 Days	
Ice Chest No.	ERC 02 404 - 99 - 005 MAX		Logbook No. F-N-3361	No. COA Method of Shipment										
Shipped To TYD &		Offsite	Offsite Property No. A030 229 Bill of Lading/Air Bill No. SEBOSPC						P_	·				
	E HAZARDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4	c						
Special Handling a	Special Handling and/or Storage			Gs*	aG	Gs*	G/R	4						
			No. of Container(s) Volume	# 3 40mL	-40ml -250ml	73 40mL	1204 5400	÷						
	Sample anai	YSIS		See item (1) is Special Instructions.		See item (3) in Special Instructions.	2	(4) in						
Sample No.	Matrix *	Sample Date	Sample Time											
B16WB4	SOIL	5/8/03	1025	X	X	X_	入	<u>.</u>						
														:
			•				-					1	<u> </u>	· · · · · ·
CHAIN OF POS		Sign/Prin		ate/Time	SPE	1 CIAL INSTI he laboratory i	RUCTIC is to report	NS both ken	osene and diesel	range cor	mpounds from	n WTPH-D an	alysis.	Matrix *
T-5. Fore Relinguished By Removed	Frie	Received By/Sig	STONATURE STEELS	. I .	1300 (2) TPH	Semi-VOA - 82 -Diesel Range Alcohols, Glyc	270A (TCI - WTPH-I ols, & Ket	L); Semi-' O; TPH-0 ones - 80	IA (Add-On) (2: VOA — 8270A (lasoline Range - 15 (Diethyl ethe 7, Cobalt-60, E t	Add-On) WTPH-G r, Ethylen	{2-Butoxyeth i; PCBs - 808 se glycol, Me	nanol, Tributyl 12 thanol}	phosphate);	S=Soil SE=Sodiment SO=Solid SI=Sludge W = Water O=Oil And Disposint Solids
Relinduished By/Renhoved		45 Januario	14 3728 5		HS Arse	ma Spec - Add mium, Americi nic, Razium, B IA (Add on) (I	Loe (Anti- turr241, t codlium, (Bismuth, E	mony-125 sutopic U Chromius loron): 10	i Cesium-134, I ranium; Trace E i, Copper, Lead, 7 Anions - 300.0	lements I lements I Mercury, (Cidorida	6, Radion-2 CF/MS - 200 Nickel, Silve, Plooride, 1	28, Tin-126); .8 (Complete) er, Uranium); virrogen in Nite	lectopic (Antimony, ICP Metats rate, Nitrogen	Dir Olim Solids Dir Drum Liquid Policy Victoria L-Liquid V-Vegesation
Relinquished By/Removed Ref A 372 Relinquished By/Removed	8 51363 (300). 1 From Date/Time	Received By/Sto	50/136 med in [Oute/Firme 3 /3 (Oute/Firme		(Soil) - 9 045 P re	ersonne elinquist	not ava	e (Total) - 335.2 silable to es from the 3	728	(IC) - 300.7	{Pater og ear in a	mmonium): (X=Other
		5-14-03-0735	- D. Mrin	5.14.03	ile 7 5 C	R	Ref# <u>16</u>	on _	5/12/1	73 -			Date/Time	
\ <u>-</u>	Disposal Method					Disp	osed By						Date/Time	

FH-Central Plat	teau Project	CI	HAIN OF CUST	ODY/S	AMPLI	E ANALY	SIS	REQUEST	F03	-006-72	Page 1 c	of 1		
Collector Johansen/Pope/Pfister			iny Contact Hulstrom	ne No. 928			Project Coordinato TRENT, SJ	Price Code	8N	Data Turs	1			
Project Designation 200-PW-2/200-PW-4 OU	- Borehole Soil Sampling		Sampling Location 216-A-37 (C4106); (272.5'-275')					SAF No. F03-006	Air Quality		45 Days			
Ice Chest No. ELC			Logbook No. F-N-3361				Method of Shipmen Federal Express	t						
Shipped To REC	Formerly TMA) 4/22/08	Offsite	e Property No.	30	229			Bill of Lading/Air						
POSSIBLE SAMPLE HA			Preservation	Cool 4C	Cool 4C	Cool 4C	Non	ne None						
Seesial Handling and/o	- Ctourge		Type of Container No. of Container(s)	aG l	aG l	aG	aG	a 4						
Special Handling and/o	r Storage					1		1/1						
			Volume	120mL	60mL	120mL	60m	<i>Y</i>						
	SAMPLE ANALYSIS			Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	Sec item Speci Instruct	iai /						
							Ŋ	Mrs	Tieta	,				
Sample No.		imple Date	Sample Time			1 1	7		BIGWD					
B16W89	SOIL 💰	18/0	3 1025	<u> </u>	+ *	+-	 			1				
							<u> </u>							
CHAIN OF POSSES	SION	Sign/Prit	nt Names	<u> </u>	SPI	ECIAL INSTI	RUCTION	ONS 954-	4/22/03			Matrix *		
Relinquished By/Removed From		dived By/Sip	oreddin ERC Da	ate/Time 8-03	1415 rap									
Relinquished By/Removed From	Date/Time Rec	peived By/Sto	ored In 7A 5728 518	ate/Time	16 (19)) Technetium-99; 9, Niekel-63, Ne	, Strontiu pruntum-	m-89,90 - Total Sr, Ison	pic Therium (Therium-	232); Carbon 1	4 : lo dine-	SI=Sladge W = Water O=Oil		
Relinquished By/Removed From	Date/Time Rec	ceived By/Sta	ored in D	hate/Time 13 03	1300				, , ,			A=Air DS=Drum Solids DL=Drum Liquids T=Tissue		
Relinquished By/Removed From Date/Time Received By/Stored In Date/Time						Personnel not available to relinquish samples from the 3728								
Relinquished By/Removed From	5.14.03 0935	ceived By/St	5240	ate/Time	5	Ref# 119 on 5/13/03						X=Other		
Relinquished By/Removed From	n Date/Time Re	ceived By/S/	ored In D	Date/Time										
LABORATORY SECTION Receiv	red By			1	Title	. <u> </u>					Date/Time			
FINAL SAMPLE Dispose DISPOSITION	sal Method					Disp	osed By			1	Date/Time			

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

urchase Order/Project:

DATE: 5.14.03

AF# /SOW# / Release #:

F03-006

aboratory SDG #:

03051403

OTE:	ALL ENTRIES MARKED "NO" MUST BE	1 .		ENT SECTION	•
1.	Custody seals on coolers or shipping container intact, signed and dated?	XYes	D No	DNA .	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	Yes .	□ No	AVA	see Comment #
3.	Airbill # recorded?	D-Yes	□ No	□ N/A	D see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	T) Yes	□ N ₀	DN/A	□ see Comment#
5.	Sample containers are intact?	Syres	□ №	D N/A	D see Comment #
6.	Custody seals on sample containers intact, signed and dated?	CD/Yes	□ No.	□ N/A	See Comment #
7.	All samples on coc received?	Yes	□ No	DNA	· 🗅 see Comment #
8.	All sample label information matches coc?	Yes	D No	D N/A·	see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	□ Yes	□ No	DNIA	☐ see Comment #
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	by Yes	□ N ₀	□ N/A	D see Comment #
11.	Where applicable, bar code labels are affixed to coc?	D Yes	D No	AMERI	See Comment #
12.	coc signed and dated?	Yes Yes	□ N ₀	□ N/A	□ see Comment i
13.	coc will be faxed or emailed to client?	DYes.	□ No	DNA	see Comment
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	D Yes	. □ No	DYNA	🗓 see Comment (

Cooler # / temp (°C) and Comments:

ERC 02 -404 | 1.2"

Laboratory Sample Custodian:

Laboratory Project Manager:

Lionville Laboratory, Inc. PCB ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403 LVL # MTX PREP # COLLECTION EXTR/PREP CLIENT ID ANALYSIS B16WB4 002 S 03LE0582 05/08/03 05/15/03 05/20/03 LAB QC: S 03LE0582 N/A S 03LE0582 N/A MB1 05/15/03 05/20/03 PBLKUB

MB1 BS

PBLKUB

1804/m/s

05/20/03

05/15/03





Analytical Report

W.O. #: 11343-606-001-9999-00

Date Received: 05-14-03

Client: TNU-HANFORD F03-006 LVL #: 0305L403

SDG/SAF #: H2208/F03-006

PCB

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were extracted on 05-15-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-20-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. All required holding times for extraction and analysis have been met.
- 3. The sample and its associated QC samples received Sulfuric Acid and Sulfur cleanups.
- 4. The method blank was below the reporting limits for all target compounds.
- 5. All surrogate recoveries were within acceptance criteria.
- 6. The blank spike recovery was within acceptance criteria.
- 7. Due to insufficient sample volume, matrix spike QC could not be performed on any samples in this data set. However, blank spike QC were performed with these samples to demonstrate that systems were in control.
- 8. All initial calibrations associated with this data set were within acceptance criteria.
- 9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

pef\r:\group\data\pest\tnu hanford\05L-403.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form 1 and flagged with a "P".
- This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC/MS.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 06/21/03 17:29 Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1 RFW Batch Number: 0305L403

	Cust ID:	B16WB4	ŀ	PBLKUB		PBLKUB BS		
Sample	RFW#:	002	2	03LE0582-N	Œ1	03LE0582-M	ß1	
Information	Matrix:	SOIL		SOIL		SOIL		
	D.F.:	1.0	0	1.0	00	1.0	0	•
	Units:	UG/I	(G	UG/E	(G	UG/K	(G	
Surrogate:	Decachlorobiphenyl	115	%	100	용	115	%	
	Tetrachloro-m-xylene	100	冬	115	ક	95	ક	
==========	=======================================		==f1	========	==f1	_=======	=fl	
Aroclor-1016		16	U	15	U	104	윻	
Aroclor-1221		16	Ū	15	U	15	U	•
Aroclor-1232		16	U	15	U	15	U	
Aroclor-1242		16	U	15	U	15	Ü	
Aroclor-1248		16	Ū	15	Ū	15	Ū	
Aroclor-1254		16	U	15	U	15	U	
Aroclor-1260	-	16	Ų	15	U	108	8	



U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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<u>030s</u>	LAI	<u>03</u>		FIELD PE	:HSUNI	VEL: C	OMPLE	EIE ONL	T SHAL	A-C	ABHI (T	>	į	E-G					Н	Τ-	T de	ONVILLE E	ABORATO	RY INC.
lient	TNU	Hamfor	d Fo	J3-00L	· · · · · · · · · · · · · · · · · · ·		Refrige	erator #		1	2			3-					2	2	J.			
st. Final Pro						· · · · · · · · · · · · · · · · · · ·	#/Type	Container	Liquid	3														<u> </u>
roject #	E CO	1343-60	6-00-9	999-00			,			300	Rq			300					امم	lag	امعد			—
roject Conta	et/Pho	ne f				~	Volume		Liquid					9										├─
onville Lab	oratory	Project Maru	ager <u>Q</u>	g-ette	ahne	سمر	Breeze	vatives	Solid	40	<u>aso</u>			40					190	<u>60</u>	196			-
392	<u> </u>	Del 311	<u>2 TAT⊇</u>	som /	<u>u</u>		114341	V#UVES	<u>l</u>			ANIC		1,5			INC	RG	 		. 8			
ate Rec'd _	514	.03	Date Due _	6-13-	03		REQUE		-	§3	BNA	Pest/	Herb	Alcehalt Greeist	,		Metal	S	1 to	252 202			4.	
ATRIX				· · · · · · · · · · · · · · · · · · ·		Matrix					· 	· · · · ·	Ţ			le La	borato		e Only		Ţ			
DDES: Soil Soliment	Lab ID		Client ID/Descri	ption		QC Chosen (V)	Matrix	Date Collected	Time Collected	おなお	625.X	09-c8		200				:	#CR6	2 N 8 N Z	TOGGA		:	
) - Selid Sludge					M	S MSD				ठ	00	90		ĕ					H	17	끍			ļ
- Water - Oil	$ \infty $	BILL	to a feet was a second of	<u></u>			5	57.03	1050	*	X		-97		•								<u> </u>	
Air - Drum	<u>∞</u> ≥	BIGU					11-	5.8-63	1035	X.	X			X		<u>.</u>						ļ		
Solids Drum	003	BIGU	<u> 789 </u>	· · · · · · · · · · · · · · · · · · ·			1	7	1		ļ		-					ļ	X	X	X	ļ		
Liquids EP/TCLP	<u> </u>				•		 	ļ ·		╀—		<u> </u>	-			. <u> </u>	<u> </u>		 			-	1	<u> </u>
Leachate - Wipe	<u> </u>						 	<u> </u>		┼	-	 										-	1	┼
Other Fish	<u> </u>						·	<u> </u>		-		 		 					 -			 	-	+
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pecial Instruc	tions:	<u> </u>	- 	<u> </u>	l,	DATE	/REVISIO	NS:	<u> </u>	<u> </u>	<u></u>						┢		Lionvil	ie Lab	oratory	Use C	niv	
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							3. Hg. 1	•		- /				3 100		_ 2)	Ambie	475/ ent or 6	nilled	// Pi	Unbroi ackage Preser	⑦ or nton S	r N ample	
								. 5. <u> </u>									- C	ondition Samp	vedinič n (*) o kes Prøsen	r N	Sa	Unbro	¥∖ or	N
Relinquishe by	ed	Received	Date	Time					_ O F	ii Ğ ı	MAL	me	San	repanci nples La C Recor	bels ar	d _	, 5)) Recei	ved Wit	r N	U	OC Rea pon Sa		lec't
1898 -	>	DYMi.	\$n 5 Ho3	2935		· 1	1100	<u> </u>	RE	WR.	115	N		res:	U: 1	~ W	Н	olding [*]	Times	r N		oo le r emp	Ĭð-	_ ℃

	<u> </u>	- 1	 			 _						Deer 1	of 1
FH-Central Platea Collector Johansen/Pope/Pfister	u Project 💢	Comp	HAIN OF CUST only Contact Hulstrom	CODY/SA Telephon 373-39	e No.	ANAL		REQUEST Project Coordi TRENT, SJ			3-006-86 8N	<u> </u>	rnaround
Project Designation 200-PW-2/200-PW-4 OU - Bo	orehole Soil Sampling	Sampi	ling Location -A-37 (C4106); (237.5'-2	40")	 			SAF No. F03-006		Air Quality		30]	Days
Ice Chest No.	02 904 49-005 8/2 8	Field	Logbook No. F-N-3361		COA 117504ES	10		Method of Ship Government					
Shipped To 1705/12/03 Waste Sampling & Character	3 Recra	Offsite N/A	e Property No.	30	229			Bill of Lading/		No. SEZ	- 65/	2	
POSSIBLE SAMPLE HAZA	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 44	c∬			}]
Special Handling and/or S	torage	•	Type of Container	Gs*	#G	Gs*	G/P	[
	5		No. of Container(s)	3 40mL	1 250mL	3 40mL	5009				ļ	ļ	
' 	20030	1de 1	Volume	See item (1) in	See item (2) in	Set item (3) in	1.61	1					ļ
	SAMPLE ANAL	YSIS	•	Special Instructions.	Special Instructions.	Special Instructions.	See Stefa (Special Instruction	oest.			<u>.</u>		
				·•			V_{-}						
Sample No.	Matrix *	Sample Date	Sample Time									71 (
B16WB3 W03000374	SOIL	5-7-03	1050	<u> </u>	<u> </u>	- 	7				 	<u> </u>	
CHAIN OF POSSESSIO		Sign/Prin	red Ja Da	ite/Time	•• T	LAL INSTI		NS both kerosene and	diesel rang	e compounds from	n WTPH-D and	ılysis.	Matrix *
Relinquisted By/Removed From (M) MU 50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	118 5/7/03/40	05 / 3D 182	15 A-5	103 1				A - 8260A (Add-O); Semi-VOA 82					SE-Sofiment SO-Solid SI-Sludge
EDBB (ID)	1 5/8/03 130			SIN OB	30 TPH-	Diesel Range Icohols, Glyco	WTPH-D	TPH-Gasoline Ra	nge - WTI noi, Dieth	PH-G; PCBs - 808 yl ether, Ethylene	2 glycol, Methan	ol}	O-OS W = Water
THE THE THE THE THE THE	5/8/03/415	5 REMOVILLE	RNickon	58031	415 Game	na Spee - Add	on (Antin	eium 137, Cobat-C cony-125, Cesium I ctopio Uranium; Tr	34, Padie	m- 226, Radium-2	2 8, Tin- 126); 1:	sotopic 🔪	A-Alt DS-Dram Selice
Refrequished ElyRemoved From		Received By/Sto	r 14372851		Arsti Urani	ic, Bahum, Be um j. ICP Met	ryllum, C	admium, Chromium 4 (Add-on) (Disent	i, Copper, th, Boron)	pead, Merousy, N 10 Autom - 200	iokel, Selenius O (Chioride, F	Silver, Iveride,	5. 2 -
Relinquished By/Removed From KEF 1A 3728 51	Date/Time 303 /300		MALL 5130		g) 300.7	(Nitrogen in	هبزأتمييم	n Nitrite, Phosphate 1; pH (Soil) 2045		Cyanide (10th)	333.2 , Cation	((C) -	X-Other
Relinguished By/Removed From SJGALE JULY LABORATORY Received By	1303 1300 Hewley 5140	Received By/Sto	E X	Me/Time	rel	rsonnel not inquish sam of # L A or	ples from	n the 3728 /3/03 —				Date/Time	<u></u>
SECTION			•										

FH-Central Plates	u Project	CI	IAIN OF CUST	ODY/S	AMPLE	ANAL	YSIS	REQUEST		F03	3-006-87	Page 1	of 1
Collector Johansen/Pope/Pfister	· · · · · · · · · · · · · · · · · · ·		iny Contact Hulstrom	Telephor 373-39				Project Coordinate TRENT, SJ	ator	Price Code	8N	Data Tur	1
Project Designation 200-PW-2/200-PW-4 OU - B	orehole Soil Sampling		ing Location -A-37 (C4106); (272.5'-2	275')				SAF No. F03-006		Air Quality		30 1	Days
·	02404 2005 NATARO	Field I	Logbook No. F-N-3361		COA 117504ES	10		Method of Ships Government V					
Shipped To TYO 5-12- Waste Sampling & Character	03 Reca	Offsite - N/A	Property No. A	30 2	29			Bill of Lading/A	ir Bill i	No. Sec	s' os	PC	
POSSIBLE SAMPLE HAZA			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4	1					
Special Handling and/or S	itorage		Type of Container	Gs*	≱G	Gs*	G/R					<u> </u>	
	•		No. of Container(s)	73	1934-36-69	40mL	120				<u> </u>	ļ <u>.</u>	
			Volume	40mL	250mc	ļ	560	_				ļ	
	SAMPLE ANAI	Ysis	•	See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Séc idea (4					
Sample No.	Matrix *	Sample Date	Sample Time										
B16WB4	SOIL	5/8/03	1026	X	X	X	X	· _					
				· ·	 			-{-	·_			<u> </u>	
			- •		1						 		
	,												
CHAIN OF POSSESSIC Relinquished By/Removed From J-5, JE ST	Date/Time Date/Time	Received By/Sto	s s	ate/Time	(i) (2) (7) (1) (1) (1) (2) (3) (4)	VOA - 8260A (Semi-VOA - 82 -Diesel Range Alcohols, Glyco	s to report TCL); VC 70A (TCL - WTPH-E ols, & Ket	both kerosene and di A - 8260A (Add-On .); Semi-VOA 827); TPH-Gasoline Ran ones - 8015 (Diethyl) {2-Pent 0A (Add- ge - WT) ether, Et	anone, Benzyl alc On) (2-Butoxyeth PH-G; PCBs - 808 hylene glycol, Me	ohol, n-Butylb ianol, Tributyl 2 ibanol)	enzene) phosphate);	Matrix * S-Soil SE-Sediment SO-Solid SI-Slutge W = Water O-ON
DOWNER OF THE PROPERTY OF THE	B 5/8/03/		ERNICISION 5	8 03	Gen Plate	me-Spec - Add mium; Americi	-on (Antir un-241, L	esium-137, Cobalt-60 nony-125, Cesium-13 sotopic Uranium, Tra	14, Radio Ce Eleme	m-226, Radium-2 ms 1CP/MS - 200	28, Tin-126); 8 (Complete)	laetopic {Autimony;~	Disposition Solids Disposition Liquids
Relinquished By/Rethoved From	Date/Time Date/Time	Read By Sto		ate/Time 803 /L ate/Time	<u> 117 6010</u>	A (Add on) (E	ismuth, D	Thromium, Copper, Loren); IC Anions - 30 ; Cyanide (Total) - 3	0 0.0 (Ch	loride, Plantide, N	itrogen in Nite	etc, Nitrogen	Wi-Wipo L-Liquid V-Vegetation
	1383 (300). Date/Time	Received By/Sto S_J OA-Le Received By/Sto	WheL 5130			Suity = 9 045	_	not available to	, v	and (so) soul.	fram Abus en a	. (X=Other
Relipquished By/Removed From On Control LABORATORY SECTION Received E	51303 130	5 14 03 0735	- Dynan	,	66735		linquish	samples from the on <u>S /12</u>		-		Date/Time	
FINAL SAMPLE Disposal N DISPOSITION	Sethod	· · · · · · · · · · · · · · · · · · ·			**	Disp	nsed By					Date/Time	

r									E03	-006-72	Page 1	of 1
FH-Central Plateau Project		IN OF CUST			CANAL	(SIS I	REQUEST		F U.S-	-000-72	1.4	<u> </u>
Collector Johansen/Pope/Pfister	Company LC Hui	Contact strom	Telephor 373-39				Project Coordinato TRENT, SJ	Pr	rice Code	8N	Data Tur	j
Project Designation 200-PW-2/200-PW-4 OU - Borehole Soil Sampling	Sampling		75')				SAF No. F03-006	Ai	ir Quality		45 I	Days
Ice Chest No. ERC 02 404	Field Log HNF-N			COA 117504ES	310		Method of Shipmer Federal Express	nt				
Shipped To RECRA 492- -EBERLINE SERVICES (Formerly TMA) 4/22/08	Offsite Pr	roperty No. AC	30	229	r		Bill of Lading/Air	Bill No.	SEE	05	<u> </u>	ı -
POSSIBLE SAMPLE HAZARDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	None	None					
Special Handling and/or Storage		Type of Container	aG 	aG	aG	aG	# 4			·		
Special Handring audroi Storage	1	No. of Container(s)	ı	1	1	1					<u> </u>	
		Volume	120mL	60mL	120mL	60mL	<u> </u>					
SAMPLE ANALYSIS			Chromium Hex • 7.196	NO2/NO3 - 353.2	Qil & Gresse	See item (1 Special Instructio	71		Tieto:			
Sample No. Matrix * Sample	ple Date	Sample Time		1					110.0			
B16W89 SOIL 5/	18/03	1025	X	*	1	V			BlowD	5		
										<u> </u>		
									<u> </u>	<u> </u>	<u> </u>	ļ
			<u> </u>	┷		<u> </u>		2//-	<u> </u>		<u> </u>	1
Relinquished By/Resigved From Lif Date/Time Receive	Sign/Print N	in the Da	ate/Time	**-	The laboratory is	o to actricy	NS SWEET OF STATE OF	7/22 DUDCUE ON WIPH	for Carbon-14.	** The labor	atory is to	Matrix * S=Soit SE=Setiment
Relinquished By/Remover From Date/Time Receiv	ved By/Stored		8-03 are/Time	<u> </u>		Strontium	-89,90 Total Sr; Ison	opic Ther	rium (Thorium (232}; Carbon	- 14; Io dine-	SC=Schaech SC=Solid St=Studge W = Water
Relinquished By/Removed From Date/Time Receiv	ved By/Stored	in a Da	ate/Time		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		78-	1/2	705			O=Oil A=Air DS=Drum Solids
Relinquished By/Removed From Date/Time Recei	GALEX wed By/Stored		ate/Time	1000	Personnel	not avail	lable to					DL=Dram Liquids T=Tissue Wt=Wipe L=Liquid
Relimpuished By/Removed From Date/Time Recei	ate/Time		relinguish	samples	from the 3728					V=Vegetation X=Other		
Relinquished By/Removed From Date/Time Recei												
LABORATORY Received By SECTION		·—·	7	Title							Date/Time	<u> </u>
FINAL SAMPLE Disposal Method					Disp	osed By					Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

urchase Order/Project:

DATE: 5.14.03

AF# /SOW# / Release #:

F03-006

,aboratory SDG #:

03051403

OTE:	ALL ENTRIES MARKED "NO" MUST BE		N THE COMM	ENT SECTION	
1.	Custody seals on coolers or shipping container intact, signed and dated?	XYes	□ №	D N/A	□ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	Yes	D No	□ N/A	🗅 see Comment #
3.	Airbill # recorded?	`SoYes	□ No	□ N/A	□ see Comment#
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	TVes	D No	D N/A	□ see Comment #
5.	Sample containers are intact?	Byres	□ No	D N/A	D see Comment #
6.	Custody seals on sample containers intact, signed and dated?	13/Yes	□ No.	DNA	🖸 see Comment #
7.	All samples on coc received?	Yes	□ No	D N/A	· Disec Comment #
8.	All sample label information matches coc?	Yes	□ No	DN/A·	see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	□ Yes	□ No	SINA	□ see Comment #
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	NY Yes	D No	O N/A	□ see Comment #
11.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	AMA	□ see Comment #
12.	coc signed and dated?	Yes Yes	□ No	D N/A	D see Comment #
13.	coc will be faxed or emailed to client?	⊠'Yes∙	□ N ₀	D N/A	🖸 see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ N ₀	AINE	□ see Comment #

Cooler # / temp (°C) and Comments:

ERC 02 .404 / 1.2"

Laboratory Sample Custodian:

Laboratory Project Manager:

Lionville Laboratory, Inc. GCSC ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

CLIENT ID	LVL	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
						·	
B16WB4	002		s	03LE0610	05/08/03	05/21/03	05/23/03
B16WB4	002	MS	S	03LE0610	05/08/03	05/21/03	05/23/03
B16WB4	002	MSD	s	03LE0610	05/08/03	05/21/03	05/23/03
LAB QC:							
							
BLK	MB1		s	03LE0610	N/A	05/21/03	05/22/03
BLK	MB1	BS	\$	03LE0610	N/A	05/21/03	05/22/03







Analytical Report

Client: TNU HANFORD F03-006

LVL#: 0305L403

SDG/SAF#: H2208/F03-006

W.O.#: 11343-606-001-9999-00

Date Received: 05-14-03

GC SCAN

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were prepped on 05-21-03 and analyzed on 05-22,23-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Methanol, Ethyl Ether, and 1-Butanol.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. All required holding times for analysis have been met.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. Surrogates are not currently employed in the methodology.
- 5. All blank spike recoveries were within acceptance criteria.
- 6. All matrix spike recoveries were within acceptance criteria.
- 7. All initial calibrations were within acceptance criteria.
- 8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

r:\group\data\gcsc\05L-403b.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.



GLOSSARY OF GC SCAN DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- **DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- **DF** = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.



GLOSSARY OF GC SCAN DATA

- This flag is used for an GC SCAN target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- **D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- This flag applies to a compound that has been confirmed by GC SCAN.

Lionville Laboratory, Inc.

GC SCAN

Report Date: 06/21/03 09:32

Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1 RFW Batch Number: 0305L403 B16WB4 BLK BLK BS B16WB4 Cust ID: B16WB4 002 MSD 03LE0610-MB1 03LE0610-MB1 002 MS Sample RFW#: 002 SOIL SOIL Information Matrix: SOIL SOIL SOIL 1.00 1.00 1.00 1.00 D.F.: 1.00 mq/kq mg/kg mg/kg mg/kg Units: mq/kq 24 U 80 욹 81 옿 25 U 54 % 25 U 50 % Ethyl Ether____ 24 U 60 ۶ ا 99 % 25 U 94 % 94 % 1-Butanol 24 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Charles (2)

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Lionville Labo	ratory U	se Only Cu	stody Tra									լ/տ qu	est	~ <i>r</i> ~ t Pag	e <u>l</u>	۳۱۵ of <u>- </u>	4 * * <u>U</u>	,	3	V	L].
<u>030s</u>	<u>,L40</u>	<u>3</u>	FIELD PERS	SONNE	L: C		TE ONL	Y SHAD	A-C	REAS	3 	F	<u>G</u>				H	Τ-	7	osvitte	AEORATO	NINC.
Client	Mu-	Hamford	F03-006			Refrige	rator#			2			2				2	2_	2			
Est. Final Pro	j. Samp			· · · · · · · · · · · · · · · · · · ·		#/Туре	Container	Liquid Solid	3.	lG ₀			30e		-	-	100	ia	١٥٥			
Project #			- 1,114-00					Liquid	1	100		· .	े व		1		₽™	~~	1			
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			Due 6- 13-03			ANALY		->	VOA	ORG VNS	Pest/ PCB DIN	Herb	A Icebail Greel		Moto		2 2		+ 00			
MATRIX				_	trix				<u> </u>			+	<u> </u>	Lionville	Labor	atory l	Jse Onl	ly	, 			
CODES: S - Soil SE - Sediment	Lab ID	Client II	D/Description	Cho	C osen /)	Matrix	Date Collected	Time Collected	मर्ग्य	X 22.50	2300 0000		GCC				1086	2 M3 M2	A390			
SO - Solid SL - Sludge	<u> </u>			MS	MSD	- }-			 	 	-		9		├-		+	14	H	ļ		├
W - Water O - Oil	σστ	BILL WB3				\$	57.63		<u> </u> *		≯• 11	-07	X		-			 	 	┼	 	\vdash
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Special Instruc		SAF # FO	o3 -00 V		5-10		1. <u>Can</u> 2 <u>Simple</u> 3. <u>Hg. 1</u> 4. <u>Soy</u>	1. 16.	AL.	A 9	. As.	o, t	1, 100	, NO.	<u>L.C.</u> 104	793:	es were: Oped — Delivered	/_ or 	1 1 6 9/ F	amper Re) Preser ackage) Unbroi ackage	sistant Se on On or or kein on	ruter Ni Outer
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Jeorg.			H03 2735			11011		RE	WR	TIE	N	CO		d?Y or			ceived W g Times	or N		Cooler Temp	19	_ °C

FH-Central Platea	n Project	41	CHAIN OF CUST	ODV/S	AMDI E	ANAT	veie	DF	OUEST	T	F03	-006-86	Page 1	of 1
Collector Johansen/Pope/Pfister	a i rojeci	Com	pany Contact C Hulstrom	Telephor 373-39	ne No.	ANAL	1 313	Pro	ject Coordinator ENT, SJ	Pri	,	8N		rnaround
Project Designation 200-PW-2/200-PW-4 OU - So	orehole Soil Sampling		pling Location 16-A-37 (C4106); (237.5'-2	40')			· ·		No. -006	Air	Quality		30]	Days
ce Chest No. ERC	02 904 49-005 8/28	1305 Field	d Logbook No. NF-N-3361		COA 117504ESI	0			hod of Shipment overnment Vehicle	· 				
Shipped To 1WD5/12/03 Waste Sampling & Characteri	zación Recra	Our	ite Property No.	30	229				of Lading/Air Bi	ll No.	SEE	-03/	PC	<u> </u>
POSSIBLE SAMPLE HAZAI	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool	ю/						
Special Handling and/or St	torage	•	Type of Container	Gs*	aG	Gs*	G/I	7			<u> </u>			
	20030	lda l	No. of Container(s) Volume	40mL	250mL	40mL	199							
-:	SAMPLE ANAL		See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Instructions.	Society:	(4) in al ions.							
Sample No. B16WB3	Matrix *	Sample Dat			-	-	\ \d							
W03000375			7030					_						
			•											
CHAIN OF POSSESSIO	N	Sign/Pr	int Names	<u> </u>	SPEC	IAL INSTE	LUCTIC)NS				<u> </u>	<u></u>	Matrix *
<u></u>	105 5 7 03 14	75 V S V S	15 A 5	17103 1	405 (1) v	OA - 8260A (TCL); VC)A - 8	kerosene and diesel ri 260A (Add-Ou) (2-P	entanone	Benzyl alco	hol, n-Butylbe	enzene}	S=Soil SE=Sediment SO=Solid
Reformshed By/Removed Form	Dite fine 2 5 6 03 130	~ (1) NELL LIE		818103	1300 TPH-1	Diesel Range - Icohols, Glyco	WTPH-I	ones -	mi-VOA – 8270A (A H-Gasoline Range - V 8015 {I-Butanot, Di	TPH-G	PCBs - 808; er. Ethylene	2 dvcol. Methan	ol)	SI-Sludge W = Water O-Oil A-Air
	51803 HIS			te/Time 5803 te/Time	17 (19)	is Spee - Add inst: Americi	on (Anti m-241; h	BODY- Solopic	-137, Cobah-60, Euro 125, Cesium 134, Ra o Uranium; Trace Elo	lium-22 monto IC	6, Radium 22 P/MS - 200 !	8, Tiu-126}; t 8 (Complete) (Sotopic \ Antimony,	DS-Drum Solids Pr Orum Dquid
	Date Time		# 1437285K	Ke/Time	Urani Urani	Mer Mer	<u> 213 - 6010</u>	A (Ad	um, Chromium, Copp ld-on) (Bismedi, Bor nie, Phosphale, Sulfa	m}; IC :	Aniono 300.	0 (Chlorida, F	lweride, /	try inself
Relinquished By/Removed From REF 1A 3728 51 Relinquished By/Removed From	30 <i>3 </i> 3∞	Received By/S Received By/S	ENAL 5/30		<u>C)</u> 300.7	Nitrogen in o	availabl	a); pli e to	I (Soil) - 9045.	-11,-3-	•			
Relinquished By/Removed From S.J. S. S. S. S. S. S. S. S. S. S. S. S. S.	1303 1300 HEUCK SHO			}/ °/3) Ti		inquish sam f # <u>/ A</u> or	iples fro 1_5_/	m the	5/03 ——		. — .		Date/Time	
FINAL SAMPLE Disposal Med DISPOSITION	sthod					Dispo	sed By					1	Date/Time	

FH-Central Plate	au Project	C	HAIN OF CUST	CODV/S	AMDIE	ANAL	VSIS P	FOUEST	F03	-006-87	Page 1	of 1
Collector Johansen/Pope/Pfister	au I Toject	Comp	any Contact Hulstrom	Telepho 373-3	ne No.	THITTE		roject Coordinator RENT, 81	Price Code	8N	Data Tur	naround
Project Designation 200-PW-2/200-PW-4 OU - E	Porchale Sail Sampling	Sampl	ing Location -A-37 (C4106); (272.5'-2				s	AF No. 03-006	Air Quality		30 I	Days
	02 404	· Field	Logbook No. F-N-3361		COA 117504ES	10	N	dethod of Shipment Government Vehicl				
Shipped To TYD 5-12-	-03 0	Offsite	Property No. A	30 2	229			Bill of Lading/Air B	III No. SEC	s ' as	ے حم	
POSSIBLE SAMPLE HAZA			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Special Handling and/or	Storage		Type of Container	Gs*	aG	Gs ⁹ mg-4-80-od	G/h					
	•		No. of Container(s) Volume	1/3 40mL	-10mL	73 40mL	MSA TO					
	SAMPLE ANAL	YSIS	Volume	See item (1) in Special Instructions.	a See item (2) in Special Instructions.	See item (3) in Special Instructions.	54971L	in l				
Sample No.	Matrix *	Sample Date	Sample Time									
B16WB4	SOIL	5/8/03	1026	X	<u> </u>	X	X	-				
		<u> </u>										
CHAIN OF POSSESSI Relinquished By/Removed From J-S. Foll Gran Relinquished By/Removed From	Date/Time 5/8/03 11	Sign/Prin	\$ 100 st	ate/Time	(1)	VOA - 8260A	is to report b (TCL); VOA	NS oth kerosene and diesel (A - 8260A (Add-On) (2-1 (Semi-VOA — 8270A (A	Pentanone, Benzyl alco	ohol, n-Butyibe	enzene)	Matrix * S=Soil SE=Sodiment SO=Solid SI=Sludge
OMAIN EVIORIA		Received By/Sto	Pricka 5	-5102 18103 18103 1	1472 (3)	Alcohols, Glyc Gamma Specim ma Spec - Add	ols, & Keton nscopy (Ces Los (Antim	TPH-Gasoline Range - 1 nes - 8015 (Diethyl ether nun-137, Cobek-60; Eur nny-125, Cesium-134, R. ropte Urantum; Trace St	r, Ethylene glycol, Met roptum-152, Europtum adium-226, Radium-2	hanol} -154, Europiu 28, Tin-126 };	leatepic \	W - Water O-Oil A Chi Del-Deline Solida Del-Drum Coulds
Relinquished By/Removed From	Date/Time Date/Time 1383 (300)	Received By/Sto	45 Aces	nic, Barium, B A (Add on) (I	eryllium, Ch Bismuth, Do	ron); IC Anions - 300.0 Cyanide (Total) - 335.2;	Mercury, Nickel, Silve (Chloride, Pluoride, N	a, Uranium), l itrogen in Nitr	ICP Metals	Wi-Wips L-Liquid V-Vegennion X-Other		
Relinquished By/Removed From OFILE Mode LABORATORY Received	Date/Time 51303 130	Received By/St		Date/Time			elinguish s	not available to samples from the 37 on 5 /17 /1	28		Date/Time	
FINAL SAMPLE Disposal DISPOSITION	Method			- H		Disp	oosed By	<u> </u>		<u></u>	Date/Time	<u> </u>

FH-Central Plates	au Project	Cl	HAIN OF CUS	TODY/S	AMPLE	ANALY	YSIS	REQUEST		F03-	-006-72	Page 1	of I
Collector Johansen/Pope/Pfister			nny Contact Hulstrom	Telepho 373-3				Project Coordin TRENT, SJ	ator	Price Code	8N	Data Tur	į
Project Designation 200-PW-2/200-PW-4 OU - E	Sorehole Soil Sampling	Sampl 216	ing Location -A-37 (C4106); (272.5'-	-275')				SAF No. F03-006		Air Quality		45 I	Days
Ice Chest No. ERC C	2 404		Logbook No. F-N-3361		COA 117504ES	10		Method of Ship Federal Expre				·	
Shipped To RECT - EBERLINE SERVICES (Fo	RA 492 morty TMA) 4/2	Offsite	e Property No.	93 <i>0</i>	229	7		Bill of Lading/	Air Bill	No. SEE	057	<u> </u>	
POSSIBLE SAMPLE HAZA		7	Preservation	Coal 4C	Cool 4C	Cool 4C	Noo	e None			_		_
Special Handling and/or	Storage		Type of Container	aG	aG	aG	aG	ac					
Special Handling and/or	Stor age		No. of Container(s)	J	1	1	1	1 1				<u> </u>	
		Volume	120mL	60mL	120mL	60m	<i>Y</i>						
			Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Grease - 413.1	See item Speci Instruct	<u>a</u> /						
	SAMPLE ANAL	YSIS					44	17/8				1	
						200 000 000	! /`	Ж.	4.	Ticto:			
Sample No.	Matrix *	Sample Date					7			BILWD	<u> </u>		
B16W89	SOIL	5/8/0	1025	+->	1 *	1	 	- 		Oleus	<u> </u>		
							<u> </u>						
CHAIN OF POSSESSI	ON	Siga/Pri	nt Names		SPE	CIAL INSTI	RUCTIO	ONS 982	9//	22/03	<u> </u>	<u> </u>	Matrix *
Relinquished By/Removed From 1	Date/Time	AReceived By/St	oreduin ERC	Date/Time	**	The leboratory i	a to achic	ve a detection limit of sel range compounds	1 50.0 pc	CUE for Carbon-14.	** The labor	atory is to	S=Soil SE=Sediment
Religioushed By Removed From	Date/Time	Received By/St	ored in	Date/Time	(18)					Thorium (Thorium)	232); Carbon	14; Iodine-	SO=Solid SI=Sludge W = Water
Relinquished By/Removed From	Date/Tithe	Received By/St		Date/Time		Niekel-63, Ne	lxeentmo-z	492	7/	122/03			O=Oil A=Air DS=Drum Solids
	51303 1300 Date/Time	Received By/St	x14 xleli-c	13 03 Date/Time	1300							-	DL=Drum Liquids T=Tissue WI=Wipe
Swifther Stale C	51303 1300	FED	<u>ξ</u> X	Date/Time		Personnel relinguish	sample	s from the 3728					L=Liquid V=Vegetation
Reliminished By/Removed From	Date/Time 5/4/03/093	ared In 5:14	03 083		Ref # <u>/ /</u>	on <u>-</u>	5 113 103	-				X=Other	
Relinquished By/Removed From	Date/Time	Received By	ored in	Date/Time					·				
LABORATORY Received SECTION	Ву			•	Title							Date/Time	
FINAL SAMPLE Disposal DISPOSITION	Method	<u> </u>				Disp	osed By					Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

LIENT: THU Howland

urchase Order/Project:

DATE:

5.H.03

AF# /SOW# / Release #:

F03-006

aboratory SDG #:

03051403

TE:	ALL ENTRIES MARKED "NO" MUST BE	EXPLAINED II	THE COMM	ENT SECTION	₹ .
1.	Custody seals on coolers or shipping container intact, signed and dated?	XYes .	. D No .	D N/A	see Comment #
2.	Outside of coolers or shipping containers are free from damage?	D Yes	□ No	DNA	☐ see Comment #
3.	Airbill # recorded?	DeYes :	□ No	DNA	🗆 see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	Yes /	□ No	□ N/A	☐ sec Comment #
5.	Sample containers are intact?	Bares	□ No	□ N/A	D see Comment #
6.	Custody seals on sample containers intact, signed and dated?	DAY es	D No.	DNA	D see Comment
7.	All samples on coc received?	Yes	□ No	DNA	· D see Comment i
8.	All sample label information matches coc?	Yes	□ No	D N/A·	see Comment
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	□ Yes	□ N ₀	SN/A	☐ see Comment
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	by Yes	. □ Nº	D N/A	☐ see Comment
11.	Where applicable, bar code labels are affixed to coc?	DYes	□ No	DMIA	🗆 see Comment
12.	coc signed and dated?	Yes Yes	□ N ₀	DWA	🗆 see Comment
13.	coc will be faxed or emailed to client?	⊠-Yes-	□ N ₀	D N/A	🗆 see Commen
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	r □ Yes	□ N ₀	UNA	D see Commen

Cooler # / temp (°C) and Comments:

ERC 02 .404 / 1.2"

Laboratory Sample Custodian:

Laboratory Project Manager:

De Mines

Lionville Laboratory, Inc. 3015 ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

CLIENT ID	LVL	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
					· · · · · · · · · · · · · · · · · · ·		
B16WB4	002		S	03LE0604	05/08/03	05/20/03	05/20/03
B16WB4	002	MS	S	03LE0604	05/08/03	05/20/03	05/20/03
B16WB4	002	MSD	S	03LE0604	05/08/03	05/20/03	05/20/03
LAB QC:							
BLK	MB1		s	03LE0604	N/A	05/20/03	05/20/03
BLK	MB1	BS	S	03LE0604	N/A	05/20/03	05/20/03







Analytical Report

Client: TNU HANFORD F03-006

LVL#: 0305L403

SDG/SAF#: H2208/F03-006

W.O.#: 11343-606-001-9999-00

Date Received: 05-14-03

GC SCAN-Ethylene Gylcol

One (1) soil sample was collected on 05-08-03.

The sample and its associated QC samples were prepped and analyzed on 05-20-03 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for Ethylene Glycol.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. All required holding times for analysis have been met.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. Surrogates are not currently employed in the methodology.
- 5. The blank spike recovery was within acceptance criteria.
- 6. All matrix spike recoveries were within acceptance criteria.
- 7. All initial calibrations were within acceptance criteria.
- 8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

r:\group\data\gcsc\05L-403.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.



GLOSSARY OF GC SCAN DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.



GLOSSARY OF GC SCAN DATA

- P = This flag is used for an GC SCAN target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- **D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC SCAN.

Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015

Report Date: 06/21/03 08:41 \ \foating Client: TNUHANFORD F03-006 H2208 Work Order: 11343606001 Page: 1 RFW Batch Number: 0305L403

	Cust ID:	B16WB4	B16WB4	B16WB4	BLK	BLK BS	
Sample	RFW#:	002	002 MS	002 MSD	03LE0604-MB1	03LE0604-MB1	
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	
	D.F.:	1.00	1.00	1.00	1.00	1.00	
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	
		=====fl==	f1=:	f;	l=====f1		:
Ethylene Glycol		21.0 U	102 %	101 %	25.0 U	98 %	



U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Lionville Labor	atory Us	se Only	C	usto	dy Ti	ransf	er F	Rec	ord/L	.ab	Wo	rk	Re	que	est	Pag	je <u> </u>	_ of _	1_			3	\/	1	1
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<u>030s</u>											<u> </u>	<u>a</u>		_F	<u>-G</u>			- ,		Η_,	I,	7)NVIIIF 14	BURNION	******
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CODES: S - Soil SE - Sediment	i.ab ID		Clier	nt ID/Descrip	ption	Ch	QC iosen (•∕)	Matrix	Date Collected	Time Collected	まなる	625.X	09.60 0 P.CS		925					1 CR 6	ZN3 14 L	1096R		:	
SO - Selid SL - Sludge						MS	MSD				8	00	00		ŏ		_	_		<u> </u>	14	<u> </u>		<u> </u>	 -
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by_	by by by						raci		 _	 111	MA L		COC	Reco	rd?Y o		•	Receiv Olding T	Питуес			cooler	ه (۷)	<i>э</i> г Р1	
LAGOR	Teas Dynum 5 H03 2735							7	-	RE	REWRITEN NOTES:				(v) or N Temp. 1.00 °C										

FH-Central Platea	UAIN OF CUST	ODV/S	AMDII	PANAT	veie	. D	FOURCT		F0:	3-006-86	Page 1	of 1		
Collector Johansen/Pope/Pfister	u Project 🦞	Comp	HAIN OF CUST any Contact Hulstrom	Telephor 373-3	ne No.	ANAL	1010	Pr	roject Coordin RENT, SJ		Price Code		Data Tu	
Project Designation 200-PW-2/200-PW-4 OU - Bo			ling Location -A-37 (C4106); (237.5'-2	(40')					AF No.)3-006		Air Quality		30 1	Days
Ice Chest No. FRC	02 904 49-0050/28	Field HN	Logbook No. F-N-3361		COA 117504ES	10			ethod of Ships Government V					,,,,
Shipped To 1705/12/03 Waste Sampling & Character	zauon Recra	Offsit	e Property No.	030	229	? -,	·	Bill of Lading/Air Bill No. SEE OS?					2	
POSSIBLE SAMPLE HAZA	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool	14C /	1					
Special Handling and/or S	torage		Type of Container	Gs*	aG	Gs*	G/							
			No. of Container(s)	3 40mL	250mL	3 40mL	89		 		 	ļ		
 	20030	Wel	Volume	See item (1) in		<u> </u>	1.61					<u> </u>		ļ
	SAMPLE ANAL	YSIS	·	Special Instructions.	Special Instructions.	Special Instructions.	Sor Stein Speci Instruct							
				}				-			j .			}
Sample No.	Matrix *	Sample Date	Sample Time					ļ						
B16WB3 W03&000374	SOIL	5-7-03	1050	X	×	 	- 7	<u>_</u>			- 		ļ <u>.</u>	
(CO 5 6 CO 5 C	·				 									
			•											
CHAIN OF POSSESSIO		Sign/Prin	it Names	<u> </u>	SPF	CIAL INSTI	HCTI	ONS	<u> </u>			<u></u>		Matrix *
Thirthungan to have		Received By/Ste	red in Da	I) 03 (UV2	The laboratory is	s to repor	rt bot	th kerosene and di	_	e compounds from anone, Benzyl alco		•	S=Soil SE=Sediment SO=Solid
Reinquished By/Removed Fram	Date/Fine 5/8/03 (30	ONWIND		8003	1300 IEH	-Diesel Range -	WTPH-	D; T	PH-Gasoline Ran	ge - WII	On) (2-Butoxyeth PH-G; PCBs - 808 yl ether, Ethylene	2		SI=Shudge W = Water O=Oil
	L 5 18 103 141	5 Burney	- Raickon	5803	KHS (4)	German Spectro	ecopy (C	Gosiu Lincon	ra-137, Cobate 60 rv-125, Cesium-13	, Europiu 4. Redin	an-152, Europium m 226. Radium 2	-154, Europius 28, Tin-120): 1	miii); \	A=Air DS=Druce Solids DF Druce Solids
Removished ElyRemovid From	DANGTIME UN HONDE 1415	Received By/Sto	red in A 200 a cold	K B 11	Aust Una	nte, Barrian, Be ivan), ICP Met	ryllium, i als - 60 f	Cadi On (mium, Chromium, Add-on) (Bismut	Copper, i, Boron)	nts ICRAMS 200. [cad, Moreury, N ; IC Anions 200.	iokal, Salaziun . 0 [Chlorida, F	heride,	147 Hone
Relinguished By/Removed From KEF 1A 3728 51	Date/Time 303 /300		SASh 5130		O 300.	7 (Nitrogen in 	m moniu	- 	pH (Soil) 2045	Suitate);	Cyanide (Total) -	333.2; Cation	(I C)- <i>I</i>	X=Other
Relinguished By/Removed From SJANE MADE	Dete/Time 51303 1300	Received By/Sto	EX	ate/Time	re	ersonnel not elinquish sam ef#or	ples fro	om t	the 3728					<u></u>
LABORATORY Received By SECTION	, mesich si40.	3/935 2	Xmin 5.40	3 / °93> Ti	itle K	C1 # ///_OI	· <u> </u>					·	Date/Time	
FINAL SAMPLE Disposal M DISPOSITION	ethod					Dispo	sed By					·	Date/Time	

FH-Central Plate	an Project	C	HAIN OF CUST	ODY/S	AMPL	E ANAL	YSIS	REOU	EST	F	03-006-87	Page 1	of 1
Collector Johansen/Pope/Pfister		Comp	any Contact Hulstrom	Telephor	ne No.				oordinator	Price Code	8N	Data Tu	raground
Project Designation 200-PW-2/200-PW-4 OU - 1	Rosehole Soil Sampling	Sampl	ling Location -A-37 (C4106); (272.5'-2	2759				SAF No. F03-006		Air Quali	ty 🗆	30 1	Days
	2 02 404 2 005 46 527	Field	Logbook No. F-N-3361		COA 117504E	<u> </u>			f Shipment ment Vehicle	•	<u> </u>		
Shipped To TYJ 5-12 Waste Sampling & Character	-03 0	Offsit	4	30 2	29	····		Bill of La	ding/Air Bi	ING SE	8 OS	PC	
POSSIBLE SAMPLE HAZ		<u> </u>	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4	II	·				
Special Handling and/or	Storage		Type of Container	Gs*	aG	Gs*	G/K						
Special Handling and of	Storage	•	No. of Container(s)	73	1) (1)	2.41					
			Volume	40mL	250mL	40mL	Sterr	<u>- 1</u>					
	SAMPLE ANAI	LYSIS		See item (1) in Special Instructions.	See item (2) i Special Instructions	Special	Se ram (1					
Sample No.	Matrix *	Sample Date	Sample Time										
B16WB4	SOIL	5/8/03	1026	X	X	X	X						
				·	<u> </u>		 -	- · · ·			 -	<u> </u>	<u> </u>
			•										
CHAIN OF POSSESSI	ON	Sign/Pris	it Names		SPE	CIAL INSTI	RUCTIO	NS					Matrix *
Relinquished By/Removed From J-5. FS/E ASA Relinquished By/Removed From	Date/Time - 5/8/43 11	Received By/Sto	red in S	ate/Time	70 (1)	The laboratory i VOA - 8260A (Semi-VOA - 82	is to report (TCL); VO 270A (TCL	both kerose A - 8260A); Semi-VO	(Add-On) (2-P A 8270A (A	inge compounds fi intanone, Benzyl a id-On) (2-Butoxy	alcohol, n-Butylh ethanol, Tributyl	enzene}	S=Soil SE=Sediment SO=Solid SI=Sledge
Relinquished By Removed From CONSTRUCTION	\$\\ \S\\ \S\\ \S\\ \S\\ \S\\ \S\\ \S\\		TERNIUS S	- 5K 03	(4)	Alcohols, Glyc	ols, & Keu	mes - 8015 sium-137,	(Diethyl ether, obelt-60, Euro	TPH-G; PCBs - 8 Ethylene glycol, N plum-152, Europe lium-226, Radion	Aethanol) im-154, Europiu	m-135);	W = Water O-Oil Andly Di-Dain Solids Di-Dram Liquid
Relinquished By/Removed From		Reserved By/Sto		ate Time	115	enic Barium, B OA (Add on) (I	lune241, ls Jeryllium, C Bismuth, B	otopic Urar hromium, (ron); IG A	itant, Trace Ele opper, Lead, N sions - 300.0 (c	ments ICP/IMS = 2 lercary, Nickel, Si Shloride, Placeide	00:8 (Complete) Iver, Uranium), Nimogen in Nim	(Autimony, ICP Metals* rate, Nitrogen	Times Winwigo L=Liquid V=Vegetation
	Date/Time 1383 1300	Received By/Sto				(30il) - 9 045	•	Cyanide (Cations (IC) - 300	:7 (Niuogen in a	maconium): (X-Other
Relinquished By/Removed From 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	S1303 130 By Speed Fy	×		5.14.03	ide 7 5 \		elinquish	samples	from the 372 _/ <u>/2</u> _/ <u>a</u>			Date/Time	
FINAL SAMPLE Disposal DISPOSITION	Method			•	-	Disp	osed By				·	Date/Time	

FH-Central Plate	eau Project	CI	HAIN OF CUST	ODY/S	AMPLI	E ANALY	YSIS	REQUEST	F0:	3-006-72	Page i	of]
Collector Johansen/Pope/Pfister	<u> </u>	Compa	any Contact Hulstrom	Telephor 373-39	ne No.		7	Project Coordinator TRENT, SJ	Price Code	8N	Data Tur	
Project Designation 200-PW-2/200-PW-4 OU -	Borehole Soil Sampling		ling Location 5-A-37 (C4106); (272.5'-2'	275')				SAF No. F03-006	Air Quality		45 I	Days
Ice Chest No. ERC		Field I	Logbook No. F-N-3361		COA 117504ES	S10		Method of Shipment Federal Express				
	RA 492 Formerly TMA) 4/22/01	2 Offsite	e Property No.	230	229	9		Bill of Lading/Air B	ill No. SEE	057	>	
POSSIBLE SAMPLE HAZ	ARDS/REMARKS	2	Preservation	Cool 4C	Cool 4C	Cool 4C	None	e None				
Special Handling and/or	r Storage		Type of Container	aG	aG	aG	aG					
Obeciai itanoing and v.	Juliage		No. of Container(s)	120.1	1 - 40-1	120-1	60m			 		ļ!
	·		Volume	120mL	60mL	120mL		/		<u> </u>	ļ	
	SAMPLE ANALYSIS			Chromium Hex - 7196	NO2/NO3 - 353.2	Oil & Greate - 413.1	See item (Special Instructi	ia / {				
Sample No.	Matrix * S	Sample Date	Sample Time	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			l y v	λ\\	Ticto		15	
B16W89	SOIL &	5/8/0)		X	メ	X	/		BILLIE	5		
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	-			+	 	 	+-			 	 	 -
CHAIN OF POSSESS	SYON	Sign/Prin	-t Names		CDE	COLAT INSTI		ONS 9812 7	(22/03			Matrix *
Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From	TH 5-8-03 1415 R	Leckived By/Spo	predilin for Di	Pate/Time 9-03 Pate/Time	1415 repo	The laboratory is nort both kerosens	e and dies	ve a detection limit of 30.0 sel range compounds from m-89,90 — Total Sr, 18000	D pcvg for Carbon-14; WTPH-D analysis.			S=Soit SE=Sediment SO=Solid SI=Sludge W = Water
Relinquished By/Removed From 7728 C	51303 1300 R	leceived By/Sto	ored in Alect 5	Date/Time	1300			• •	:/- /-/			O=Oil A=Air DS=Drain Solids DL=Drain Liquid: T=Tissue WI=Wipe
Sufficiel Waln	51303 1300	FED	<i>ξ</i> Χ	Date/Time		Personnel relinquish	Lsample	s from the 3728				L=Liquid V=Vegetation X=Other
Relinquished By/Removed From		Received By/Sto	m. 47 5440	23 <u>0835</u> Date/Time		Ref # <u># </u>	<u>ت</u> on <u>- ۲</u>	5 /13 /03				
LABORATORY Receive					Title						Date/Time	<u> </u>
SECTION	al Method					Disp	posed By				Date/Time	
DISPOSITION DISPOSI	1 Medica		•			- ,					* ***********************************	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

LIENT: THU Howard

irchase Order/Project:

DATE:

5.14.03

AF#)SOW# / Release #:

F03-006

aboratory SDG #:

OTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION Custody seals on coolers or shipping D N/A D see Comment # container intact, signed and dated? Outside of coolers or shipping containers are □/Yes D No DWA ☐ see Comment # free from damage? Airbill # recorded? D No □ N/A ☐ see Comment # All expected paperwork received (coc and □ N₀ DNA other client specific: historical data D see Comment # alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) Sample containers are intact? D/Yes □ No D N/A D see Comment # Custody seals on sample containers intact, D/Yes D No. □ N/A ☐ see Comment # signed and dated? All samples on coc received? D Yes D No D N/A D see Comment # Yes □ No D N/A · D see Comment # All sample label information matches coc? Laboratory QC samples designated on coc? D Yes □ No DNA D see Comment # (QC stickers placed on bottles?) 10. Shipment meets LvLl Sample Acceptance Yes D.No D N/A Sec Comment # Policy? (identify all bottles not within policy. See reverse side for policy) 11. Where applicable, bar code labels are D Yes VIKE D No D see Comment # affixed to coc? Q Yes D No 12. coc signed and dated? D N/A ☐ see Comment # E Yes 13. coc will be faxed or emailed to client? □ No D N/A ☐ see Comment # 14. Project Manager/Client contacted ET N/A ☐ Yes □ No ☐ see Comment #

Cooler # / temp (°C) and Comments:

ERC 02 -404 / 1.2"

concerning discrepancies? (name/date)

Laboratory Sample Custodian:

Laboratory Project Manager:

Right



Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4						
SILVER, TOTAL	002	s	03L0324	05/08/03	06/09/03	06/10/03
SILVER, TOTAL	002 REP	s	03L0324	05/08/03	06/09/03	06/10/03
SILVER, TOTAL	002 MS	s	03L0324	05/08/03	06/09/03	06/10/03
ARSENIC, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
ARSENIC, TOTAL	002 REP	s	03L0324	05/08/03	06/09/03	06/10/03
ARSENIC, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
BORON, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
BORON, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
BORON, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
BARIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
BARIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
BARIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002	s	03L0324	05/08/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002 REP	s	03L0324	05/08/03	06/09/03	06/10/03
BERYLLIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
BISMUTH, TOTAL	002	s	03L0324	05/08/03	06/09/03	06/10/03
BISMUTH, TOTAL REP	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
BISMUTH, TOTAL SPIKE	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
CADMIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
CADMIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
CADMIUM, TOTAL	002 MS	s	03L0324	05/08/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
CHROMIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
COPPER, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
COPPER, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
COPPER, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
MERCURY, TOTAL	002	S	03C0131	,05/08/03	06/04/03	06/04/03
MERCURY, TOTAL	002 REP	S	03C0131	05/08/03	06/04/03	06/04/03
MERCURY, TOTAL	002 MS	S	03C0131	05/08/03	06/04/03	06/04/03
NICKEL, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
NICKEL, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
NICKEL, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
LEAD, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
LEAD, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03

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Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
TOTAL MOMENT	002 MC		031.0324	05/08/03	06/00/03	06/10/03
LEAD, TOTAL	002 MS	S S	03L0324 03L0324	05/08/03	06/09/03 06/09/03	06/10/03 06/10/03
ANTIMONY, TOTAL	002	_				, ,
ANTIMONY, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
ANTIMONY, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03
SELENIUM, TOTAL	002	S	03L0324	05/08/03	06/09/03	06/10/03
SELENIUM, TOTAL	002 REP	S	03L0324	05/08/03	06/09/03	06/10/03
SELENIUM, TOTAL	002 MS	S	03L0324	05/08/03	06/09/03	06/10/03

LAB QC:

SILVER LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
SILVER, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ARSENIC, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BORON LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
BORON, TOTAL	MB1	s	03L0324	N/A	06/09/03	06/10/03
BARIUM LABORATORY	LC1 BS	S	03L0324	A/N	06/09/03	06/10/03
BARIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM LABORATORY	LC1 BS	s	03L0324	N/A	06/09/03	06/10/03
BERYLLIUM, TOTAL	MB1	s	03L0324	N/A	06/09/03	06/10/03
BISMUTH, LCS	LC1 BS	s	03L0324	N/A	06/09/03	06/10/03
BISMUTH, TOTAL	MB1	s	03L0324	N/A	06/09/03	06/10/03
CADMIUM LABORATORY	LC1 BS	s	03L0324	N/A	06/09/03	06/10/03
CADMIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
CHROMIUM, TOTAL	MB1	s	03L0324	N/A	06/09/03	06/10/03
COPPER LABORATORY	LC1 BS	s	03L0324	N/A	06/09/03	06/10/03
COPPER, TOTAL	MB1	s	03L0324	N/A	06/09/03	06/10/03
MERCURY LABORATORY	LC1 BS	S	03C0131	N/A	06/04/03	06/04/03
MERCURY, TOTAL	MB1	s	03C0131	N/A	06/04/03	06/04/03
NICKEL LABORATORY	LC1 BS	s	03L0324	N/A	06/09/03	06/10/03
NICKEL, TOTAL	MB1	s	03L0324	N/A	06/09/03	06/10/03
LEAD LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
LEAD, TOTAL	MB1	s	03L0324	N/A	06/09/03	06/10/03
ANTIMONY LABORATORY	LC1 BS	S	03L0324	N/A	06/09/03	06/10/03
ANTIMONY, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03
SELENIUM LABORATORY	LC1 BS	s	03L0324	N/A	06/09/03	06/10/03
SELENIUM, TOTAL	MB1	S	03L0324	N/A	06/09/03	06/10/03



Analytical Report

Client: TNU-HANFORD F03-006

LVL#: 0305L403

SDG/SAF#: H2208/F03-006

W.O.#: 11343-606-001-9999-00

Date Received: 05-14-03

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 soil sample.

- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
- 3. All analyses were performed within the required holding times.
- 4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
- 10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

		<u>PDS</u>	<u>PDS</u>
Sample ID	Element	Concentration (ppb)	% Recovery
B16WB4	Chromium	100	94.6
	Antimony	100	104.3

- 12. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

jjw/m05-403



METALS METHOD GLOSSARY

The following m Lot#: 0305L407	ethods are used as refe 3	rence for the digestic	on and analysis	s of samples	contained within this						
Leaching Procedure:131013111312Other:											
CLP Metals D	igestion and Analysis	Methods: _ILM0	3.0 _ILM04	.0							
Metals Digestion	Methods:3005A3	3010A301530)20A <u>≮</u> 3050B	3051	200.7SS17						
	M	letals Analysis Me	ethods								
				EPA							
•	SW846	EPA	STD MTD	OSWR	USATHAMA						
Aluminum	_6010B	200.7			99						
Antimony	<u>~6010B</u> _7041 ^s	200.7204.2			_99						
Arsenic	₹6010B _7060A ⁵		3113B		99						
Barium	<u>₹</u> 6010B	200.7			99						
Beryllium	★ 6010 B	200.7			99						
Bismuth	<u>⊀</u> 6010B¹	200.7 ¹		1620	99						
Boron	<u>7</u> 6010B	200.7			99						
Cadmium	<u>≁</u> 6010B7131A ⁵	200.7213.2			99						
Calcium	6010B	200.7			99						
Cabala	<u>≁</u> 6010B7191 ° 6010B	200.7218.2 200.7			SS17						
Cobalt	6010B <u></u> ←6010B7211 ⁵	200.7 200.7 220.2			99						
Copper Iron	6010B/211	200.7220.2			99 99						
Lead		200.7 239.2	3113B		99 99						
Leau Lithium	6010B 7430 4	<u></u>	31130	1620	99						
Magnesium		<u>200.7</u>		1020	99						
Manganese	6010B	<u></u>			—99 99						
Mercury	_7470A ' <u>%</u> 7471A '				99						
Molybdenum		200.7			<u></u>						
Nickel	76010B	200.7			99						
Potassium	6010B 7610 4	200.7 258.1 4			99						
Rare Earths	6010B ·	200.7 1		1620	99						
Selenium	∞6010B7740 ⁵	200.7 270.2	3113B	-	99						
Silicon	6010B '	200.7		1620	99						
Silica	6010B	200.7		1620	99						
Silver	× 6010B7761 ⁵	200.7272.2		_	99						
Sodium	6010B7770 ⁴	200.7273.1 4			99						
Strontium	6010 B	200.7			99						
Thallium	6010B7841 ⁵	200.7279.22	00.9								
l in	6010B			•	99						
Titanium	6010B	<u></u>			<u></u>						
Uranium	6010B ¹	200.7 ¹		1620	99						
Vanadium	6010B	200.7		:	99						
Zinc	601 0B	<u></u>			99						
Zirconium	6010B ¹	200.7 '		1620	99						
											

Method:

Other:____

3/01 5

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

ANALYTICAL METAL METHODS

- 1. Not included in the method element list.
- 2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, approximately 0.3 grams of sample is taken to a final volume of 50 mL (including all reagents).
- 3. Flame AA.
- 4. Graphite Furnace AA.

L-WI-033/N-04/98

INORGANICS DATA SUMMARY REPORT 06/16/03

CLIENT: TNUHANFORD F03-006 H2208
WORK ORDER: 11343-606-001-9999-00

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
	************	M8888889##023388889####	******	***	*********	*******
-002	B16WB4	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	1.2	MG/KG	0.34	1.0
		Boron, Total	0.84	MG/KG	0.20	1.0
		Barium, Total	49.3	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.53 u	MG/KG	0.53	1.0
		Cadmium, Total	0.18	MG/KG	0.04	1.0
		Chromium, Total	7.1	MG/KG	0.10	1.0
		Copper, Total	11.5	MG/KG	0.06	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Nickel, Total	7.7	MG/KG	0.13	1.0
		Lead, Total	4.5	MG/KG	0.24	1.0
		Antimony, Total	0.58	MG/KG	0.23	1.0
		Selenium, Total	0.43 u	MG/KG	0.43	1.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/16/03

CLIENT: TNUHANFORD F03-006 H2208 WORK ORDER: 11343-606-001-9999-00

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
****	************	*****************	******		*******	******
BLANK1	03L0324-MB1	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Boron, Total	0.19 u	MG/KG	0.19	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.51 u	MG/KG	0.51	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.12	MG/KG	0.10	1.0
		Copper, Total	0.08	MG/KG	0.06	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.24	MG/KG	0.23	1.0
		Antimony, Total	0.27	MG/KG	0.22	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
BLANK1	03C0131-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

INORGANICS ACCURACY REPORT 06/16/03

CLIENT: TNUHANFORD F03-006 H2208 WORK ORDER: 11343-606-001-9999-00

,,,,,,,							
			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	AMOUNT	*RECOV	FACTOR (SPK)
*****	不完全国际共享管理基本表示是国际企业	************			****		*******
-002	B16WB4	Silver, Total	4.9	0.12u	5.1	96.1	1.0
		Arsenic, Total	179	1.2	204	87.1	1.0
		Boron, Total	86.9	0.84	102	84.4	1.0
		Barium, Total	224	49.3	204	85.7	1.0
		Beryllium, Total	4.6	0.01u	5.1	90.2	1.0
		Bismuth, Total	439	0.53u	510	86.1	1.0
		Cadmium, Total	4.9	0.18	5.1	92.5	1.0
		Chromium, Total	44.0	7.1	20.4	180.9	1.0
		Copper, Total	34.2	11.5	25.5	89.0	1.0
		Mercury, Total	0.17	0.02u	0.17	99.4	1.0
		Nickel, Total	61.9	7.7	51.0	106.3	1.0
		Lead, Total	49.2	4.5	51.0	87.6	1.0
		Antimony, Total	31.8	0.58	51.0	61.2	1.0
		Selenium, Total	166	0.43u	204	81.1	1.0

INORGANICS PRECISION REPORT 06/16/03

CLIENT: TNUHANFORD F03-006 H2208

LVL LOT #: 0305L403

MORIC ORD	BK. 11345 000 000 000	**				
			INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	FACTOR (REP)
****		****	*****			
-002REP	B16WB4	Silver, Total	0.12u	0.12u	NC	1.0
		Arsenic, Total	1.2	1.0	18.2	1.0
		Boron, Total	0.84	0.64	26.2	1.0
		Barium, Total	49.3	49.3	0.00	1.0
		Beryllium, Total	0.01u	0.01u	NC	1.0
		Bismuth, Total	0.53u	0.52u	NC	1.0
		Cadmium, Total	0.18	0.20	8.6	1.0
		Chromium, Total	7.1	8.1	13.2	1.0
		Copper, Total	11.5	11.5	0.00	1.0
		Mercury, Total	0.02u	0.02u	NC	1.0
		Nickel, Total	7.7	7.7	0.00	1.0
		Lead, Total	4.5	8.1	57.1	1.0
		Antimony, Total	0.58	1.1	61.3	1.0
		Selenium, Total	0.43u	0.42u	NC	1.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/16/03

CLIENT: TNUHANFORD F03-006 H2208 LVL LOT #: 0305L403

			SPIKED	SPIKED		
SAMPLE	SITE ID	ANALYTE	SAMPLE	AMOUNT	UNITS	*RECOV
	建设设备工程设备支票等的证券	***************	*#5228	****		# # # # # # # # # # # # # # # # # # #
LCS1	03L0324-LC1	Silver, LCS	50.8	50.0	MG/KG	101.6
		Arsenic, LCS	929	1000	MG/KG	92.9
		Boron, LCS	460	500	MG/KG	91.9
		Barium, LCS	493	500	MG/KG	98.6
		Beryllium, LCS	24.8	25.0	MG/KG	99.2
		Bismuth, LCS	472	500	MG/KG	94.5
		Cadmium, LCS	24.7	25.0	MG/KG	98,8
		Chromium, LCS	51.8	50.0	MG/KG	103.6
		Copper, LCS	126	125	MG/KG	101.1
		Nickel, LCS	198	200	MG/KG	99.0
		Lead, LCS	242	250	MG/KG	96.6
		Antimony, LCS	287	300	MG/KG	95.6
		Selenium, LCS	860	1000	MG/KG	86.0
LCS1	03C0131-LC1	Mercury, LCS	6.4	6.2	MG/KG	102.5

Date Rec'd		nsject Manager QQ I Sel SKO TAT Z	1 Same	₩ 0.r		Presen	vatives	Selld		ORG			40				ORG	=	60 - 72 73	+ 5			
	<u>5.14.</u>	Date Due _	6-13-03			REQUE	STED		δį:	¥ K	Pest/ PCB	Herb	A (S)	Llonv	ille La	borat	ory Us	غ کے Se Only			1		
MATRIX CODES: S - Soll SE - Sediment SO - Belid	Lab ID	Client ID/Descrip	otion	Cho Cho	trix C sen /)	Matrix	Date Collected	Time Collected	Sert H	0625 X	0 P.G		0GCL					1086	2 N3 N2	TOGGR			
	<u>оот</u>	Вишвз				\$	S-7-63	1050	X	X	gr. h	-07	X										i.
	œъ.	B16WB4		<u> </u>	3		5.803	2.0	X.	X			X	-	-		-	×	X	×	-		: : [
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FU Control Distre	· · · · · · · · · · · · · · · · · · ·							E O VIE CO	TO.	3-006-86	Page 1 (vf 1
FH-Central Platear Collector Johansen/Pope/Pfister	II Project	Comp	HAIN OF CUST any Contact Huistrom	Telephon 373-39	ie No.	E ANAL)	P	TEQUEST roject Coordinator RENT, SJ	Price Code		Data Tur	naround
roject Designation 200-PW-2/200-PW-4 OU - Bo	rehole Soil Sampling		ling Location -A-37 (C4106); (237.5'-2	40')			1 -	AF No. 03-006	Air Quality		30 I	ays
ce Chest No. ERC		Field	Logbook No. F-N-3361		COA 117504E	ES10	М	lethod of Shipment Government Vehicle				
Shipped To TYD 5/12/03 Waste Sampling & Character	Batton Recra	Offsit	e Property No. A	030	22	9		Bill of Lading/Air Bil	INO. SEZ	= 6s/	² C	
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Special Handling and/or St	torage		Type of Container	Gs*	аG	Gs*	G/P					
			No. of Container(s)	3	1 250-1	3	- col 1			ļ		
	20030	Uel_	Volume	40ml.	250mL		50041			ļ		
**	SAMPLE ANAL	Ysis		See Item (1) in Special Instructions.	See item (2) Special Instruction	Special	Section (4) Special Instruction					į
Sample No.	Matrix *	Sample Date	Sample Time	end and provide								
B16WB3	SOIL	5-7-03	1050	X	X	1 1	X	-		 	<u> </u>	
<u> W03000379</u>	5	· · · · · · · · · · · · · · · · · · ·		 	 					 	 	<u> </u>
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CHAIN OF POSSESSIO	N	Sign/Pri	N-man		100	ECIAL INSTI	L	ale.			<u> </u>	Matrix *
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Refinquished By/Removed From Refinquished By/Removed From	Date Time Date Time	Received By/St	F 1A 3728 5		비도 (th	rsenic, Barrum, Bornani, Permissen, McP Mer introduction Nigrate.	eryllaum, Ca rais - 0010A Nitrogen w	dmiura, Chromium, Copp (Add-on) (Dismuili, Bor Mitrite, Phosphate, Suita	er, Lead, Meroury, m): 10 Anions - 10	Niekel, Seleniu 0.0-(Chloride, l	u Silver lucride,	x-oder
REF 1A 3728 S Retinquished By/Removed From SJAALE WALL		Received By/St	EX	3 130 Date/Time		Personnel not relinquish san Ref # A o	available	1 the 3728			Date/Time	
LABORATORY Received By SECTION	y - 100 W/ 3/70	J10735 D	ماران و حسر، بهر	-, ,-, 1								

FH-Central Plates	au Project	CI	IAIN OF CUST	ODY/S	AMPLE	E ANAL!	YSIS R	LEQUEST	FC	3-006-87	Page 1 o	f · I
ollector Johansen/Pope/Pfister		Compa	ny Contact Iulstrom	Telepho 373-3	ne No.		P	roject Coordinator RENT, §J	Price Code	8N	Data Turr	
roject Designation 200-PW-2/200-PW-4 OU - B	orchole Soil Sampling	Sample 216-	ing Location A-37 (C4106); (272.5'-2	757)				6AF No. 703-006	Air Qualit	y 🗆	30 D	ays
	02-404 Q-005-44527		ogbook No. -N-3361		COA 117504ES	510	N	Aethod of Shipment Government Vehicl	c			
hipped To TWD 5-12- Waste Sampling & Characte			Property No. Ac	30 2	229			Bill of Lading/Air B	III No. SE	o' os	ے ح	
POSSIBLE SAMPLE HAZA			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	/				
Special Handling and/or	Storage	! 	Type of Container	G5* 1961 4-30-63	aG	Gs*	G/P					
		•	No. of Container(s)	73 40mL	1 290436-63	40mL	THIS ALL					
·			Volume		250mc	. }	Storn L	- (_		
	SAMPLE ANA	LYSIS		See item (1) is Special instructions.	Special	Special	See from (4)	1 1				
Sample No.	Matrix *	Sample Date	Sample Time									i katang menjeri Si Si dipung
B16WB4	SOIL	5/8/03	1026	X	X	X	X					
				 			 					
												· · · · ·
CHAIN OF POSSESSI	ON .	Sign/Prin	t Names	<u> </u>	SPE	CIAL INSTI	RUCTIO	NS			<u> </u>	Matrix *
Relinquished By/Removed From J-S. FS/E H84	Date/Time - 5/8/03 /	Peccine By/Sio	5 V 5 5	ate/Time	120 1	VOA - 8260A (ጠር! ን- VO	ooth kerosene and diesel A - 8260A (Add-On) {2-1); Semi-VOA 8270A (/	Pentanone, Benzyl s	icohol, n-Butylb	enzene)	S=Soli SE=Soliment SO=Solid SI=Sludge
Reingluiched Bylkemoved Franc	Date/Time/ 5/8/03/ TH Date/Time		1840by me		1300 IN	I-Diesel Range Alcohols, Give	- WIPH-D	; TPH-Gasoline Range - ' nes - 8015 (Diethyl ether	WTPH-G; PCBs - 8 r, Ethylene glycol, N	082 Aethanol}	ι .	O-OH
indiyurbylzhadhu	ND 51803	HE LANDING		8/03	شقا لا ١٩٤١	mana Conce - Add	Los (Antim	sium 127, Cobalt-60, Est ony-125, Cesium-134, R ocopic Uranium, Trace El	-dium-226, Radiou	-228, Tim 126) -	isetepic 🔪	Dil-Draw Liquid
Relinquished By/Removed From -	USD 5/8/13	Readings ByrSto	MA 3728 5	SUS 1	415 48	enic Barium, B OA (Add an) (i	Jegdium, C Biomath: De	Isomium, Copper, Dead, ront: IG Anions - 300.0	Mercury, Nickel, 34 (Chiloride, Fluoride	(va., Urzanau), Nitrogen in Nitr	ato, Nitr ogen/	V-Vegeselen
Relinquished By/Removed From PFF-1A 3728 S	Date/Time 1300	Received By/Sto	Wel 5130		00 #	(3ull) = 9045		Cyanide (Total) - 335.2;	Cations (IC) - 300	i) (Mitofen m.s		X-Other
Relinquished By/Romoved From	51303 130		EX	outo/Time			elinquish	not available to samples from the 37 ⊢on _5_/12_/4			Duta/Ti	<u> </u>
LABORATORY Received SECTION	By Glean E	+ 5+443 0735	- Dignan	5.14.03	Title 7 5 1	r	×1π <u>Γ **</u>		<u>-</u>		Date/Time	
FINAL-SAMPLE Disposal DISPOSITION	Method					Disp	posed By				Date/Time	•

FH-Central Plates	u Project	CI	IAIN OF CUST	ODY/S	AMPLI	E ANALY	SIS	REQUEST	F03-0	006-72 Page 1	of 1
Collector Johansen/Pope/Pfister		Compa	ny Contact Julstrom	Telephor 373-39	ne No.			Project Coordinator TRENT, SJ	Price Code 8	914	rnaround
Project Designation 200-PW-2/200-PW-4 OU - B	orehole Soil Sampling		ing Location -A-37 (C4106); (272.5'-2	75')	· · · · · ·			SAF No. F03-006	Air Quality	<u> </u>	Days
ice Chest No. ELC O			Logbook No. F-N-3361		COA 117504E	S10		Method of Shipment Federal Express	!		
Shipped To EDERLINE SERVICES (For		Offsite	Property No.	30	229	T T		Bill of Lading/Air I	BIII No. SEE	057	
POSSIBLE SAMPLE HAZA	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Nor	ne None			
Special Handling and/or	Storage		Type of Container	aG	aG	aG	a(C	3 89			
Special Handling and/or S	otorage		No. of Container(s)	1	1	1	1	1			<u> </u>
			Volume	120mL	60mL	120mL	60r	nL 60mL			
	SAMPLE ANALYSIS			Chromium Hex - 7196	NO2/NO3 353.2	- Olt & Grease - 413,1	See item Spec Instruc	ciad /			
Sample No.	Matrix * Sar	nple Date	Sample Time				l y	**	Tieta:		
B16W89	SOIL 🛣	18/0		X	X	*	V		BILWD	5	
				 			-				+
CHAIN OF POSSESSI	ON	Sign/Pri	nt Names		SP	PECIAL INST	RUCT	ions 9 spc	4/22/03		Matrix *
Relinquished By/Removed From Marinaguished By/Removed From Relinquished By/Removed From	Date/Time 1415 Rec Date/Time 1415 Rep Date/Time 1415 Rep	tived By/SI WWW b gived By/SI WG F	predin FL 5 cored in 1288 5	Sate/Time	1415 "	The leberatory port both kerosen	s to sch e and di Stronti	iesel range compounds from um-89,90 - Total Sr, Ison	m WTPH-D analysis.	** The laboratory is to	S-Soil SE-Segimen SO-Solid SI-Sladge W = Water O-Oil A-Air
Relinquished By/Removed From 7728	Date/Tithe Rec 51303 1300 5	cived By/Si JGALO	52 Deles	Date/Time	13 0 0						DS=Orem So DL=Dram Li T=Tiesec Wi=Wise
	51303 1300 1	eived By/S	ϵ_{χ}	Date/Time		relinquist	Lsamp	vailable to les from the 3728			L=Liquid V=Vegetatio X=Other
Reliminished By/Removed From	Date/Time Rec	eived By/S eived By/S	100 EVA	Date/Time Date/Time	22	Ref# <u>[]</u>	on_	5 113 103			
Relinquished By/Removed From LABORATORY Received		Elved Byrd	fored th		Title	···- <u>·</u>		<u> </u>		Date/Time	
SECTION						Tri-	posed B	<u> </u>		Date/Time	
FINAL SAMPLE Disposal DISPOSITION	Method		•				,				

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

ordered DIAL THE

ase Order/Project:

DATE:

5.14.03

)SOW# / Release #:

F03-006

ratory SDG #:

E: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION Custody seals on coolers or shipping XYes □ No D N/A See Comment # container intact, signed and dated? Outside of coolers or shipping containers are □/Yes D No D N/A D see Comment # free from damage? Airbill # recorded? D No ☐ see Comment # D N/A All expected paperwork received (coc and **Q**√Yes D No D N/A See Comment # other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) Sample containers are intact? DAY es □ No D N/A ☐ see Comment # Custody seals on sample containers intact, D No. DINA □ see Comment # signed and dated? All samples on coc received? D No DNA D see Comment # D No To see Comment # DNA. All sample label information matches coc? Q_yYes Laboratory QC samples designated on coc? D Yes D No 🗖 see Comment # (OC stickers placed on bottles?) 10. Shipment meets LvLl Sample Acceptance D Yes D No DNA ☐ see Comment # Policy? (identify all bottles not within policy. See reverse side for policy) 11. Where applicable, bar code labels are D Yes D No V/KK D see Comment # affixed to coc? V Yes □ No O N/A Comment # 12. coc signed and dated? 13. coc will be faxed or emailed to client? Yes. □ No DINA ☐ see Comment # 14. Project Manager/Client contacted D Yes D No ☐ see Comment # concerning discrepancies? (name/date)

Cooler # / temp (°C) and Comments:

ERC 02 -404 / 1.2"

Laboratory Sample Custodian:

Laboratory Project Manager:

renfla



Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

21.12 11.20	-,					
CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B16WB4			·			
PTOWP4						
% SOLIDS	002	s	03L%S067	05/08/03	05/16/03	05/19/03
CHLORIDE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
CHLORIDE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
CHLORIDE BY IC	002 MS	s	03LIC032	05/08/03	05/21/03	05/21/03
FLUORIDE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
FLUORIDE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
FLUORIDE BY IC	002 MS	s	03LIC032	05/08/03	05/21/03	05/21/03
NITRITE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRITE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRITE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRATE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRATE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
NITRATE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
TOTAL CYANIDE	002	S	03LC047 .	05/08/03	05/22/03	05/22/03
TOTAL CYANIDE	002 REP	S	03LC047	05/08/03	05/22/03	05/22/03
TOTAL CYANIDE	002 MS	S	03LC047	05/08/03	05/22/03	05/22/03
PHOSPHATE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
PHOSPHATE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
PHOSPHATE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
SULFATE BY IC	002	S	03LIC032	05/08/03	05/21/03	05/21/03
SULFATE BY IC	002 REP	S	03LIC032	05/08/03	05/21/03	05/21/03
SULFATE BY IC	002 MS	S	03LIC032	05/08/03	05/21/03	05/21/03
AMMONIA	002	S	03LAMA14	05/08/03	05/24/03	05/26/03
AMMONIA	002 REP	S	03LAMA14	05/08/03	05/24/03	05/26/03
AMMONIA	002 MS	s	03LAMA14	05/08/03	05/24/03	05/26/03
PH	002	s	03LPH035	05/08/03	05/20/03	05/20/03
PH	002 REP	S	03LPH035	05/08/03	05/20/03	05/20/03
B16W89						
% SOLIDS	003	s	03L%S067	05/08/03	05/16/03	05/19/03
% SOLIDS	003 REP	S	03L%S067	05/08/03	05/16/03	05/19/03
CHROMIUM VI	003	S	03LVI044	05/08/03	05/23/03	05/23/03
CHROMIUM VI	003 REP	S	03LVI044	05/08/03	05/23/03	05/23/03
CHROMIUM VI	003 MS	s	03LVI044	05/08/03	05/23/03	05/23/03

Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-006 H2208

DATE RECEIVED: 05/14/03 LVL LOT # :0305L403

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	003 MSD	S	03LVI044	05/08/03	05/23/03	05/23/03
NITRATE NITRITE	003	S	03LN3A27	05/08/03	05/22/03	05/22/03
NITRATE NITRITE	003 REP	s	03LN3A27	05/08/03	05/22/03	05/22/03
NITRATE NITRITE	003 MS	S	03LN3A27	05/08/03	05/22/03	05/22/03
OIL & GREASE BY GRAV	003	S	03LOG023	05/08/03	06/04/03	06/05/03
OIL AND GREASE BY GR	003 REP	S	03LOG023	05/08/03	06/04/03	06/05/03
OIL AND GREASE BY GR	003 MS	S	03LOG023	05/08/03	06/04/03	06/05/03

LAB QC:

CHLORIDE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
CHLORIDE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
FLUORIDE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
FLUORIDE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
NITRITE BY IC	MB1	s	03LIC032	N/A	05/21/03	05/21/03
NITRITE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
NITRATE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
NITRATE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
TOTAL CYANIDE	LCS L	S	03LC047	N/A	05/22/03	05/22/03
TOTAL CYANIDE	LCS L	Ş	03LC047	N/A	05/22/03	05/22/03
TOTAL CYANIDE	MB1	S	03LC047	N/A	05/22/03	05/22/03
PHOSPHATE BY IC	MB1	S	03LIC032	N/A	05/21/03	05/21/03
PHOSPHATE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
SULFATE BY IC	MBl	S	03LIC032	N/A	05/21/03	05/21/03
SULFATE BY IC	MB1 BS	S	03LIC032	N/A	05/21/03	05/21/03
AMMONIA	MB1	S	03LAMA14	N/A	05/24/03	05/26/03
AMMONIA	MB1 BS	S	03LAMA14	N/A	05/24/03	05/26/03
AMMONIA	MB1 BSD	S	03LAMA14	N/A	05/24/03	05/26/03
CHROMIUM VI	MB1	S	03LVI044	N/A	05/23/03	05/23/03
CHROMIUM VI	MB1 BS	S	03LVI044	N/A	05/23/03	05/23/03
CHROMIUM VI	MB1 BSD	S	03LVI044	N/A	05/23/03	05/23/03
NITRATE NITRITE	MB1	S	03LN3A27	N/A	05/22/03	05/22/03
NITRATE NITRITE	MB1 BS	S	03LN3A27	N/A	05/22/03	05/22/03
OIL & GREASE BY GRAV	MB1	S	03LOG023	N/A	06/04/03	06/05/03
OIL AND GREASE BY GR	MB1 BS	S	03LOG023	N/A	06/04/03	06/05/03
OIL AND GREASE BY GR	MB1 BSD	S	03LOG023	N/A	06/04/03	06/05/03



Analytical Report

Client: TNU-HANFORD F03-006 H2208

LVL#: 0305L403

W.O.#: 11343-606-001-9999-00

Date Received: 05-14-03

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 soil samples.

- 2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
- 3. The sample holding times as required by the method and/or contract were met.
- 4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. The method blanks were within the method criteria.
- 6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Ammonia and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit.
- 7. The matrix spike (MS) recoveries for Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Sulfate, Ammonia, Chromium VI, Nitrate Nitrite and Oil and Grease were within the 75-125% control limits.
- 8. The replicate analyses for Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Ammonia, pH, Percent Solids, Chromium VI, Nitrate Nitrite and Oil and Grease were within the 20% RPD control limit, however replicate analysis for Sulfate was outside the control limit that may be attributed to sample inhomogeneity.
- 9. Results for solid samples are reported on a dry weight basis.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

njp\i05-403

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

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Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	ASTM	SW846	OTHER
% Ash	D2216-80		
% Moisture	D2216-80		ILMO4.0 (e)
% Solids	√ D2216-80	*	ILMO4.0 (e)
% Volatile Solids	D2216-80		
ASTM Extraction in Water	D3987-81/85		
BTU	D240-87		
CEC		9081	c
Chromium VI		3060A/7196A	-
Corrosivity by coupon by pH		1110(mod) 9045C	
Cyanide, Total		V9010B/9014	ILMO4.0 (e)
Cyanide, Reactive		Section 7.3/9014	_
Halides, Extractable Organic		9020B	EPA 600/4/84-008
Halides, Total		9020B	EPA 600/4/84-008
EP Toxicity		1310A	
Flash Point		1010	
Ignitability		1010	
Oil & Grease		√9071A	√413.1 (mad.)
Carbon, Total Organic		9060	_ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	D240-87(mod)	5050	
Petroleum Hydrocarbons, Total Rec	coverable	9071	EPA 418.1
pH, Soil		/9045C	
Sulfide, Reactive		Section 7.3/9030B	
Sulfide		9030B(mod)	
Specific Gravity	D1429-76C/ _	D5057-90	
Sulfur, Total		9056	
Synthetic Preparation Leach		1312	
Paint Filter		9095A	
Other: Charide, Thronide of	itrite) Method:	EPA 300.0 (imad.)	
Other: Mitrate Phosphate, Su	Clate Method		
Hitrate Vitrite	V	EPA 353.2 (med.)	", '
ammenia		EPA 350.3	

Lionville Laboratory Incorporated

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

- ASTM Standard Methods.
- USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
- 3. <u>Test Methods for Evaluating Solid Waste</u> (USEPA SW-846).
- a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
- b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
- c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
- d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
- e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
- f. Code of Federal Regulations.

INORGANICS DATA SUMMARY REPORT 06/06/03

CLIENT: TNUHANFORD F03-006 H2208 WORK ORDER: 11343-606-001-9999-00

					REPORTING	DIPOLION
SAMPLE	SITE ID	ANALYTE	result	UNITS	LIMIT	FACTOR
======						
-002	B16WB4	% Solids	96.1	•	0.01	1.0
		Chloride by IC	1.3 u	MG/KG	1.3	1.0
		Fluoride by IC	1.3 u	MG/KG	1.3	1.0
		Nitrite by IC	1.28 u	MG/KG	1.28	1.0
		Nitrate by IC	9.01	MG/KG	1.28	1.0
		Cyanide, Total	0.28 น	MG/KG	0.28	1.0
		Phosphate by IC	1.3 น	MG/KG	1.3	1.0
		Sulfate by IC	7.5	MG/KG	1.3	1.0
		Ammonia, as N	4.9 u	MG/KG	4.9	1.0
		рн	8.8	SOIL PH	0.01	1.0
-003	B16W89	* Solids	97.4	*	0.01	1.0
		Chromium VI	0.41 u	MG/KG	0.41	1.0
		Nitrate Nitrite	2.8	MG/KG	0.19	1.0
		Oil & Grease Gravimetri	685 u	MG/KG	685	1.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/06/03

CLIENT: TNUHANFORD F03-006 H2208 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0305L403

REPORTING

DILUTION

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	PACTOR
*****	E# 22542205#307#2225			*****		
BLANK10	03LIC032-MB1	Chloride by IC	1.2 u	MG/KG	1.2	1.0
		Fluoride by IC	1.2 u	MG/KG	1.2	1.0
		Nitrite by IC	1.25 u	MG/KG	1.25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
		Phosphate by IC	1.2 u	MG/KG	1.2	1.0
		Sulfate by IC	1.2 u	MG/KG	1.2	1.0
BLANK1	03LC047-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	03LAMA14-MB1	Ammonia, as N	5.0 u	MG/KG	5.O	1.0
BLANK10	03LVI044-MB1	Chromium VI	0,40 u	MG/KG	0.40	1.0
BLANK10	03LN3A27-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	03LOG023-MB1	Oil & Grease Gravimetri	667 u	MG/KG	667	1.0

INORGANICS ACCURACY REPORT 06/06/03

CLIENT: TNUHANFORD F03-006 H2208 WORK ORDER: 11343-606-001-9999-00

			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	AMOUNT	*RECOV	FACTOR (SPK)
				******		*****	******
-002	B16WB4	Chloride by IC	25.7	0.44	25.7	98.5	1.0
		Fluoride by IC	25.8	0.16	25.7	99.7	1.0
		Nitrite by IC	25.4	1.28u	25.7	98.8	1.0
		Nitrate by IC	36.1	9.01	25.7	105.3	1.0
		Cyanide, Total	4.53	0.28u	4.46	101.6	1.0
		Phosphate by IC	23.2	1.3 u	25.7	90.4	1.0
		Sulfate by IC	29.3	7.5	25.7	85.1	1.0
		Ammonia, as N	198	4.9 u	199	99.7	1.0
-003	B16W89	Soluble Chromium VI	3.7	0.41u	4.1	88.0	1.0
		Insoluble Chromium VI	1440	0.41u	1280	112.6	100
		Nitrate Nitrite	7.6	2.8	4.5	105.4	1.0
		Oil & Grease Gravimetr	6270	685 u	6520	96.2	1.0
BLANK10	03L1C032-MB1	Chloride by IC	24.2	1.2 u	25.0	96.7	1.0
		Fluoride by IC	24.7	1.2 u	25.0	98.9	1.0
		Nitrite by IC	24.5	1.25u	25.0	98.1	1.0
		Nitrate by IC	24.3	1.25u	25.0	97.2	1.0
		Phosphate by IC	23.4	1.2 u	25.0	93.7	1.0
		Sulfate by IC	24.5	1.2 u	25.0	97.8	1.0
BLANK10	03 LAMA14-MB1	Ammonia, as N	196	5.0 u	200	98.0	1.0
		Ammonia, as N MSD	192	5.0 u	200	96.0	1.0
BLANK10	03LVI044-MB1	Soluble Chromium VI	4.2	0.40u	4.0	104.7	1.0
		Insoluble Chromium VI	1150	0.40u	1120	102.5	100
BLANK10	03LN3A27-MB1	Nitrate Nitrite	5.2	0.20u	5.0	104.0	1.0
BLANK10	03LOG023-MB1	Oil & Greace Gravimetr	6430	66 7 u	6350	101.3	1.0
		Oil & Grease - Grav M	7230	667 u	6350	113.9	1.0

INORGANICS DUPLICATE SPIKE REPORT 06/06/03

CLIENT: TNUHANFORD F03-006 H2208

LVL LOT #: 0305L403

			SPIKE#:	SPIKE#:	2
SAMPLE	SITE ID	ANALYTE	*RBCOV	*RECOV	*DIFF

BLANK10	031AMA14-MB1	Ammonia, as N	98.0	96.0	2.1
BLANK10	03LOG023-MB1	Oil & Grease - Grav	101.3	113.9	11.7

INORGANICS PRECISION REPORT 06/06/03

CLIENT: TNUHANFORD F03-006 H2208

MORK	ORDER:	11343-606-001-9999-00
\sim	ORDER.	11343 000 001 5555 00

			INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	factor (REP)
#	*************	*****				*******
-002RBP	B16WB4	Chloride by IC	1.3 u	1.3 u	NC	1.0
		Fluoride by IC	1.3 u	1.3 u	NC	1.0
		Nitrite by IC	1.28u	1.28u	NC	1.0
		Nitrate by IC	9.01	8.02	11.7	1.0
		Cyanide, Total	0.28u	0.28u	NC	1.0
		Phosphate by IC	1.3 u	1.3 u	NC	1.0
		Sulfate by IC	7.5	2.7	94.8	1.0
		Ammonia, as N	4.9 u	5.2 u	NC	1.0
		РН	8.8	8.7	0.2	1.0
-003RBP	B16W89	% Solids	97.4	97.4	0.082	1.0
		Chromium VI	0.41u	0.41u	NC	1.0
		Nitrate Nitrite	2.6	2.9	1.9	1.0
		Oil & Grease Gravimetri	685 น	685 u	NC	1.0

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/06/03

CLIENT: TNUHANFORD F03-006 H2208

LVL LOT #: 0305L403

			SETURD	SLIVED		
SAMPLE	SITE ID	ANALYTE	SAMPLE	AMOUNT	UNITS	*RECOV
				**====		
LCSS1	03 LC047-LCS1	Cyanide, Total LCS	1.87	2.0	MG/KG	93.7
LCSS2	03LC047-LCS2	Cyanide, Total LCS	10.1	10.0	MG/KG	101.4

			_		_	_	-	(6)	OA	BNI	1 P	PCB	pro	/// -	unui	D ₁	G	rvick	~ 				
Lionville Labor	atory U	Jse Only	Cus	stody 7	Transfer	Re	cord/L	.ab	Wo	rk	Re	qu	esi	t Pa	ge	L of		-		3	V		1
0305	<u>L40</u>	<u> </u>		FIELD	PERSONNEL:	COMP	LETE ONL	Y SHAD	ED A ል - ር	AREA!	S	£	G					н	T -	110	ONVILLE LA	BORATOR	YINC.
Client	Nu-	Local	ard	F03-α)(~	Refr	gerator#		ī	2-			•					2	2	2			
Est. Final Pro	3.000					#/Tv	pe Container	Liquid	3														
Project #	- 11	343-6	rab-oc	1-9999-0	0	w/19		Solid	30	log.			إه6					امما	la	\Ga			
Protect Contact/Phone #					_ Volu	me	Liquid					9					1					<u></u> -l	
CC SPEC Del 510 TAT 30 2001							Solid		aso			40					190	60	196				
oc Spec		Del3-	<u> (ひ 1</u>	AL 30 GEA	<u> </u>	Pres	ervatives		_	OBG	ANIC		1.0			INO	RG			9		-	{
Date Rec'd 5 14 03 Date Due 6- 13-03						LYSES NUESTED	-	δ.	¥€	1 1	Herb	A Icebuil			Metal		ا ا ا ا ا	25.5 20.5 20.5 20.5 20.5 20.5 20.5 20.5	1 2			,	
MATRIX					Matrix					<u> </u>		1			le Lab	orato	ry Us	e Onl	ý	1			
CODES: S - Soil SE - Sediment SO - Selid SL - Sludge	Lab ID		Client IE	WDescription	QC Chosei (V)		Date Collected	Time Collected	はなる	X5290	09.60 00.63		0605				·	1086	2 N 8 N Z	1066A			
W - Water O - Oil	001	Bilo	WB3			15	5:7:63	1050	*	X	2. h	3	X										
A - Air DS - Drum	œэ.		w 84				5.803		X	人			Χ										
Solids DL - Drum	003	· · · · · · · · · · · · · · · · · · ·	P8 W.				1 1	1										X	X	X			
Liquids		100 Z = 100 K																					
L - EP/TCLP Leachate	1	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		7. 政府 (1) (1) (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2																			
WI - Wipe X - Other F - Fish																		<u> </u>				<u> </u>	
L- LOH			:																	ļ.,			
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1								<u> </u>	$oldsymbol{ol}}}}}}}}}}}}}}}}}$			<u> </u>						<u> </u>		<u> </u>	<u> </u>		
							<u></u>	<u> </u>	<u> </u>		<u> </u>			<u> </u>	1					<u></u>			
Special Instruc		SAF	# F0	3-006		TE/REVI - (SIONS:	.ul - 00	וכ	100	c Cla	لنا	•					Lionvi	ile Lab	oratory	Use O	nly	
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1	un I	rial Lox	~ C	*			2	II DI	() (/		ı E		1/0	04.	1 H	and De irbill # .	elivered			ickage (
					_	<u>.</u>	_ 3. 14g.1	<u>V. 15.</u>	<u> </u>	3/-	<u></u>	1. F.	<u>1, 700</u>	3 100	144	7	<u> </u>	475/	_] / P	Unbrok ackage	个) or	N
					_		_ 4. SO4_	TNH	3 N	TCV	<i>πο</i> ,	TLA						ent or (C ved in (,	3)	Presen	t on Sa	
					_		5									C	onditio	n 🕝	or N	4)	Unbrok	7	
																	Samp	les Preser	ved		ample OC Rec		
Refinquished Beceived Date Time Relinquished by							Received		Pate .	Ţπ	me			ies Betv				(D)	or N	_	pon Sar	pje Re	ec't
	-		2: 00-1 5	200				VI		MAI		COC	Reco	abels an		5) Received Within Holding Times Cooler				N			
LEOF		es ypr	7i-l/n 5	.н.оз <i>О</i> ЭЗS				RE	WR.	111	N	NOT	ES:		_		J		or N	7	emp	10-	_ ° C

	<i>ل</i> ن	4//										
FH-Central Platea Collector	u Project W		HAIN OF CUST	Telephor		ANALY		EQUEST roject Coordinator	 	3-006-86	Page 1	
Johansen/Pope/Pfister			Hulstrom	373-3		TRÊNT, SJ			The come Old			rnaround
Project Designation 200-PW-2/200-PW-4 OU - Bo	rehole Soil Sampling		oling Location 6-A-37 (C4106); (237.5'-2	240')				AF No. 03-006	Air Quality	' 🗆	30 1	Days ———
Ice Chest No.	02 904 49-005 N/2 8	51305 Field	Logbook No. VF-N-3361		COA 117504ES	10	М	lethod of Shipment Government Vehicle				
Shipped To 1705/12/03 Weste Sampling & Characterization Recra NA MINTER A 0 30 3								Bill of Lading/Air Bil	INO. SEZ	-03/	2	
POSSIBLE SAMPLE HAZAI	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
C	Type of Container	Gs*	₃G	Gs*	G/P							
Special Handling and/or Storage			No. of Container(s)	3	1	3	y					
	20030	We l	Volume	40mL	250mL	40mL	50 L					
	SAMPLE ANAL	YSIS		See item (1) in Special Instructions.	See item (2) in Special Instructions.	See item (3) in Special Imstructions.	Section (4) i Special Instructions	in .				
										·		
Sample No. B16WB3	Matrix *	Sample Date			V	- 1	X	المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة المنظمة			<u>:</u> 	`:
W03000375		<i></i>	7030								<u> </u>	
_			•	 	 				 -	 	 	
CHAIN OF POSSESSION	N	Sign/Pri	nt Names	J	SPEC	LAL INSTR	UCTION	 \$		<u> </u>	<u> </u>	Matrix *
Relinquished By Renoved From A Market By Remov	Dute/Firme	MUNIT	EL MAMMAS D	Total	405 (1) V (2) S 17H-	OA - 8260A (1 emi-VOA - 827 Diesel Range - Icohols, Glycol	CL); VOA 70A (TCL); 3 WTPH-D; 7 Is, & Ketone	th kerosene and diesel ra - 8260A (Add-On) {2-Pe Semi-VOA — 8270A (Ad IPH-Gasoline Range - W :s - 8015 {1-Butanol, Die	ntanone, Benzyl alco d-On) {2-Butoxyeth TPH-G; PCBs - 808 thyl ether, Ethylene	ohol, n-Butylbe anol, Tributyl 2 glycol, Methan	nzene} phosphate};	S=Soil SE=Sodiment SO=Solid SI=Sledge W = Water O=Oil
NAMULATURA DINAMBANA	L 5/8/03/41	5 BUNN	- Raliekon	5803	KHS Game	emme Spectron	seepy (Cosis on (Antimor	um-137, Cobalt-60, Euro ny-125, Cesium-134, Rad npie Uranium, Trace Elon	ium-152, Europtum ium-226, Radium-2	-154, Europium 28, Tin-126), L	سئٹٹ); ک Sotopic کے	A*Air DS-Drum Solids
Rethoquished By/Rethoved From	Date Time	Received By/St	gred In A and a will		Arsti Urani	ic, Barium, Bei um) ^{NCP} Meta	ryllium, Cad	mium, Chromium, Coppe (Add-on) (Bismuth, Boro	r, Lead, Meroury, N n), IC Anions - 200.	iokal, Salanius O (Chlorida, F	Silver	wg-Wipe to Line 2
Relinquished By/Removed From REF 1A 3728 51	Date/Time 303 1300	c) 3 00.7	(Nitrogen in a	ramonium);	Nitrite, Phosphale, Sulfate pH (Soil) 9045	;; Cyanide (Total) =	333.2, Cations	-(I C)- 1	X=Other			
Relinquished By/Removed From S.J. S. S. S. S. S. S. S. S. LABORATORY Received By	Date/Time 1303 1300 Medica 5140		EX_	ate/Time	rel	rsonnel not a inquish sam f#on	ples from (the 3728	· · · · · · · · · · · · · · · · · · ·		Date/Time	<u> </u>
SECTION FINAL SAMPLE Disposal Mc		-	· .						·			

FH-Central Platea	u Project	CI	IAIN OF CUST		F03-006-87	Page 1 of 1							
ollector Johansen/Pope/Pfister		Compa	ny Contact Iulstrom	Telepho 373-3	ne No.		F	roject Co RENT, §J	ordinator	Price Code	e code OI4		naround
roject Designation 200-PW-2/200-PW-4 OU - Bo	orehole Soil Sampling		ing Location A-37 (C4106); (272.5'-2	275')		:		SAF No. Air Quality F03-006			30 1	30 Days	
ce Chest No. ERC	02404 -005 NATAR		Field Logbook No. COA HNF-N-3361 1175				N	fethod of Governm	Shipment ent Vehicle	·.			
hipped To TYO 5-12-6 Waste Sampling & Character	03 hecra	Offsite	Offsite Property No. A030 229					Bill of Lading/Air Bill No. SEBOSPC					
POSSIBLE SAMPLE HAZA	RDS/REMARKS		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Λ			· · · · · · · · · · · · · · · · · · ·		
Special Handling and/or Storage Type of Container					aG	Gs*	G/P ₂						
opecar manering ander 5	No. of Container(s)	73	1 2654-36-45		MOAJO								
			Volume	40mL	250mL	40mL	Step L					_	
	SAMPLE ANAL	ys ıs		See item (1) i Special Instructions	See item (2) in Special Instructions	Special		is					
Sample No.	Matrix * .	Sample Date	Sample Time										:
316WB4	SOIL	<u> 5/8/03</u>	1025	X	X	X	1 ×				-		
				 -			 				 	<u> </u>	· ·
CHAIN OF POSSESSIO	N .	Sign/Prin	t Names	1	SPE	CIAL INSTI	RUCTION	is	1			<u> </u>	Matrix *
telinquished By/Removed From J-5. Foll E H By- Telinduiched By/Removed From	Date/Time		sign sign sign sign sign sign sign sign	ate/Time		VOA - 8260A (Semi-VOA - 82	(TCL); VOA 270A (TCL);	- 8260A (A Semi-VOA	dd-On) {2-Pe 8270A (Ae	entanone, Benzyl Id-On) (2-Butox	from WTPH-D and alcohol, n-Butylo syethanol, Tributyl	enzene}	S=Soil SE=Soilment SO=Solid SI=Sludge
HOW WENT WHITE	Detections Detections 32 32 32 32 32 32 32 3	E WWW.	Menidson 51	<u>-5103</u> 18703	1472 (4)	Alcohols, Glyco Gamma Spectro nma Spec - Add	ols, & Ketor oscopy (Ces Lon (Antime	es - 8015 (I ium-137, Ce nny-125, Ces	Nethyl ether, balt-60, Euro ium-134, Rec	lium 226, Radio	Methanol) Num-154, Europiu m-228, Tm-126);	Isoto pic 🔪	W = Water O-Oil A Dispression Dispression Dispression
Retinguished By/Removed From Retinguished By/Removed From	D	Roomed By/Sto	TA 3728 5	ate Time 803 hate/fime	45 ATS	enic Rarium, R. DA (Add on) (E turke, Prosphar	eryllium, Ch Bismuth, Do	romium, Co p on l: IC Ani	per, Lead, M ms - 300.0 ((tercury, Nickel, Statoride, Placeid	200.8 (Complete) Silver, Uranjum), Ic, Nitrogen in Nitr IC,7 (Nitrogen in a	ICP Metals - rate; Nitrogen	Un-Liquid V=Vegetmion X=Other
PEF A 3728 S	Date/Time	Received By/Stor	red in D	3 /3 (Date/Time	20 p#1	_		ot availab	le to om the 372	Ŕ		. (
LABORATORY Received By SECTION	1303 1300 , Hew F	5403093	- Di Arian	514.03	1675\				/ <u>12</u> / <u>a</u>			Date/Time	
FINAL SAMPLE Disposal M DISPOSITION	ethod					Disp	osed By				· · · · · ·	Date/Time	

FH-Central Plates	u Project	Cl	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST F03-006-72								Page 1	of 1	
Collector Johansen/Pope/Pfister			nny Contact Hulstrom	Telepho 373-3				Project Coordinator TRENT, SJ	Price Code 8N Data			Data Turnaround	
Project Designation 200-PW-2/200-PW-4 OU - B	orehole Soil Sampling		ing Location -A-37 (C4106); (272.5'-2	275')		• '		SAF No. F03-006	Air Quality 45 Days			Days	
Ice Chest No. ELC O	2 404	HN:	Logbook No. F-N-3361		COA 117504E	S10		Method of Shipment Federal Express					
Shipped To /LEC/ EDERLINE SERVICES (For	CA 492 morty TMA) 4/22/0	Offsite	Offsite Property No. AO302Z9 Bill of Lading/Air						BIII No. SEE OSPC				
POSSIBLE SAMPLE HAZA	RDS/REMARKS				1		<u> </u>			, I			
			Preservation	Cool 4C	Cool 4C	Cool 4C	Non	e None					
Special Handling and/or S	Storage		Type of Container	aG	aG	aG	вG	a.C					
_	-		No. of Container(s)	1	1	1	1	1/1	[ļ		
			Volume	120mL	60mL	120mL	60m	L 60mL				-	
	SAMPLE ANALYSIS	s	·	Chromium Hex - 7196	NO2/NO3 - 353.2	- Oil & Grease - 413.1	See item Speci Instruct	à/					
							Ŋ	Mon	Tieta:				
Sample No.	Matrix *	Sample Date	Sample Time			a dipartition	·	maring a maring decision					
B16W89	SOIL -	5/8/0	1025	1	<u> </u>	1	/		BIGWO	5			
					<u> </u>								
				<u> </u>									
										-			
CHAIN OF POSSESSIO		Sign/Prin						ONS 954- 4/	22/03	tt The Johanne		Matrix *	
Relinquished By/Removed From I	5803 145 P	techived By/Sipi HyuWW (V	redula for D	ate/Time 8-Q3				el range compounds from W		The laborator	y is to	S=Soil SE=Sediment SO=Solid	
Removed From R. Nie	10 一へんしゅうりゅうし	Received By/Stor	7A 5728 518	ate/Time	16) (1)	Technetium-99; Niekel-63, Nep		n-89,90 - Total Sr; Isotopic-		32); Carbon 14	-lodine-	SI=Sludge W = Water O=Oil	
Relinquished By/Removed From 7728 S	Date-Time	Coccived By/Stor	red In a D	ate/Time	300			-//	/ /			A=Air DS=Druss Solids DL=Druss Liquids	
Relinquished By/Removed From	Date/Time	Received By/Stor	red in D	ate/Time		Personnel	not avai	ilable to				T=Tissue W!=Wipe L=Liquid	
SoftCollect 5/303/300 FCD EX Relinquished By/Removed From Date/Time Received By/Stored In 5/4/03/0935						relinquish Ref#	samples _on5	from the 3728 1/13/03				V=Vegetation X=Other	
Relinquished By/Removed From	3 OR3S ate/Time								;				
LABORATORY Received B SECTION				T	itle				••	Da	te/Time		
FINAL SAMPLE Disposal M DISPOSITION		Disposed By Date/Time											

LIONVILLE LABORATORY INCORPORATED $_{C,\Delta}$ SAMPLE RECEIPT CHECKLIST

THENT: THU Handen

urchase Order/Project:

DATE:

5.14.03

AF#)SOW# / Release #:

F03-006

,aboratory SDG #:

TE:	OCOSLACE OTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION					
1.	Custody seals on coolers or shipping container intact, signed and dated?	XY es	□ No	DNA	☐ see Comment #	
2.	Outside of coolers or shipping containers are free from damage?	∏.Yes	D No	□ N/A	See Comment #	
3.	Airbill # recorded?	D Yes	D No	D N/A	See Comment #	
4.	All expected paperwork received (coc and other client specific: historical data, alpha/bets or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	Yes Yes	□ N ₀	DN/A	🗅 see Comment #	
5.	Sample containers are intact?) Syryes	□ No	D N/A	C see Comment i	
6.	Custody seals on sample containers intact, signed and dated?	D/Yes	DNo.	DNA	See Comment	
7.	All samples on coc received?	Yes	□ No	DNA	see Comment	
8.	All sample label information matches coc?	Yes	D No	D N/A·	☐ see Comment	
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	□ Yes	□ N ₀	DNIA	D see Comment	
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	by Yes	□ No	D N/A	□ see Comment	
11.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	D'M'Y	See Comment	
12.	coc signed and dated?	Yes Yes	□ No	DNA	□ see Commen	
13.	coc will be faxed or emailed to client?	E Yes	□ No	D N/A	See Commen	
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ No	E N/A	□ see Commer	

Cooler # / temp (°C) and Comments:

ERC 02 404 112"

Laboratory Sample Custodian:

Laboratory Project Manager:

Den Que